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AN ANALYSIS OF SOUTHWESTERN SOCIETY¹

BY WILLIAM DUNCAN STRONG

AS NEW material on the native peoples of the southwestern portion of the United States has been added to our knowledge of aboriginal culture, an historic relationship between the Pueblo area and southern California has become more and more evident. With only the outlines available twenty odd years ago, the relationship seemed decidedly tenuous, and based solely on details of material culture.² Later, with the addition of new facts, it became clear that certain of the Pueblo mythologies shared their fundamental motifs with the Luiseno, and other South Californian groups;³ while in the possession of clans and moieties there appeared in their societies at least superficial resemblances.⁴ Further work in the southern California field carried on by the author during the winter of 1924 and 1925, brought to light still other features of social organization which seemed to further the probability of such a connection.

In the light of this new viewpoint, it appears worth while to make a more extensive comparison of the society of all southwestern peoples in regard to whom we have available data than has heretofore been attempted. For this purpose the term "southwestern" is extended beyond its customary ethnologic connotation, and made geographically inclusive of the entire southwestern United States. The approximate locations of the peoples embraced in this survey are shown in the accompanying map. (Map 1.)

¹ Dissertation offered in partial fulfillment for the degree of Doctor of Philosophy, University of California, May, 1926.

² Kroeber, 1904, p. 100.

³ Haeberlin, 1916, p. 14.

⁴ Gifford, 1918, p. 218.

It is hoped that an approach from the western periphery of the Pueblo area, may to some extent shed light on the complexities of social organization there presented. The complex ritualism and society of the Pueblos themselves, with the added difficulty of obtaining information in regard to those in the Rio Grande region, forms a problem for the specialist in this area. It would seem, however, to be a problem that might well be supplemented by a consideration of those areas which apparently came under the influence of the early Pueblo, or a related culture; and which may in certain respects retain the elements from which the more elaborate societies arose. It is with this hope that the present comparative study has been made.

In the present paper the social factors to be considered are limited to those of group organization, and do not include ceremonial features save where the latter are intimately connected with the units of society and must be considered in relation to them. A few words in regard to the present use of some of the terms for social groupings may be in order. In all cases an attempt has been made to cling to the most generally accepted meanings for the terms employed, but the variety of social groupings in the area and their shifting nature, seems inevitably to make necessary some degree of redefinition.

The lineage⁵ is a unilateral kinship group, all members being united through descent from a common ancestor: where descent is patrilineal, the lineage includes a male, his offspring, and their descendants through males. In other words, the lineage in contrast to our bilateral family, is equivalent to Rivers'⁶ "joint family" and Goldenweiser's⁷ "matrilineal family" or "patrilineal family." A clan may include more than one lineage but is a similar unilateral group, which may be composed of assumed as well as real kinsfolk. As used herein the term clan is synonymous with sib and has no implication of matrilineal reckoning of descent. The sense of kinship in both lineage and clan tends to prescribe exogamy, but this often applied criterion is not used in the

⁵ Gifford, 1926.

⁶ 1924, p. 16.

⁷ 1914, p. 434

present paper; the characteristic features of the groups coming under these classifications are discussed as they are encountered.

A phratry is a major group including a number of clans, or comparable social units which preserve a sense of distinctness. Whether this major group has come about by the linking of the subdivisions, or by some other process, is not implied by the term phratry. Whenever these major groups are only two in number each is called a moiety; however, a moiety may represent an undivided half of the political unit, the emphasis being on the occurrence of a dual organization of society. Tribal organization as here used, in part complies with the definition given by Rivers.⁸

A tribe is a social group of a simple kind, the members of which speak a common dialect, have a single government, and act together for common purposes such as warfare.

Strangely enough, the Miwok lineage⁹ for example, conforms to this definition of a tribe in as much as it is a localized, politically independent and dialectic unit. Thus the possession of group consciousness over and above that based on real or assumed relationship, must be added as a criterion to distinguish these large warlike tribes from such small autonomous units. These features, with certain others to be discussed later, constitute a majority of those factors of social organization which are most fundamental in the area under consideration, and we will discuss them from the standpoint of their distribution, qualifying the broad definitions listed above by the particular features of the phenomena described.

For the use of as yet unpublished material bearing on this problem the author is greatly indebted to the following persons: to Dr. Robert H. Lowie for the use of his notes on the social organization of the Hopi, gathered under the auspices of the American Museum of Natural History in 1915 and 1916; to Dr. Leslie Spier for the use of his paper on the Havasupai, shortly to be published in the Anthropological Papers of the latter institution; to Dr. Gladys Reichard for material on Navajo society, and to Miss Ann Gayton for information on the Yokuts.

⁸ 1924, p. 32.

⁹ Gifford, 1926

of localized bands occupying rather large areas quite peacefully, seems to be revealed by more recent investigation.¹¹ The Chumash and Gabrielino people apparently acted as village units on their brief war excursions, and the rest of the neighboring California Shoshonean groups were similarly united in either villages or localized clans. The Plateau Shoshoneans, such as the Chemehuevi, appear to have been organized in more or less isolated bands, as were their linguistic kinsfolk of the Great Basin.¹² The degree to which the dialectic groups were united in former times is not very clear.

With the Yuman people of the Colorado River we first encounter large, united and warlike tribes, including the Mohave, Yuma, Cocopa and other, now extinct peoples.¹³ These groups ranging from 500 to 5000 souls, formed quite coherent units in their war expeditions, which utterly distinguishes them from their loosely organized and peaceful Shoshonean neighbors to the west. The Yuman Diegueño, however, resembled their Cahuilla and Luiseño neighbors in their aboriginal condition of local groups or autonomous lineages.¹⁴ Apparently the Walapai and Yavapai resembled the Havasupai in possessing somewhat the same tribal organization as their down-river Yuman neighbors, but were too few in numbers to carry on such extensive campaigns. According to data secured by Spier the Havasupai have six chiefs today, one of whom occupies a superior status, with, however, only limited powers. Formerly in war any chief might assume directive capacity. No data on the otherwise similar Walapai and Yavapai being at hand, we must assume much the same condition of a rather vague unified or tribal sense for them.

The Uto-Aztekan Pima were at least in historic times confederated in one tribe, each village having a chief, and all village chiefs electing a head chief.¹⁵ According to Russell the tribe acted as a unit against the Apache, but accounts of campaigns¹⁶ seem

¹¹ Kroeber, 1925, p. 496.

¹² Lowie, 1924, p. 193.

¹³ Kroeber, 1925, p. 795.

¹⁴ Spier, 1923, p. 298.

¹⁵ Russell, 1904, p. 195.

¹⁶ *Ibid.*, p. 201.

to indicate individual village or war party movements rather than tribal mass action. In Southern California it can be clearly demonstrated that the Desert Cahuilla clans, formerly independent, were nominally united under one clan chief through Mexican influence. In the light of the revocation of the Pima head chiefs' commission in 1864, by the United States Bureau of Indian Affairs,¹⁷ it seems possible that this condition among the Pima was brought about in the same manner through Caucasian influence. However this may be, there is no doubt that the Pima were a strongly organized people as their successful competition with the warlike Apache and Colorado River tribes indicates. It is probable that the Papago organization was very similar to that of the Pima.

The Athapascan Apache and Navajo, appear to have been in historic times distributed in more or less localized bands over a large area.¹⁸ The Jicarilla Apache have at present two chiefs, elected from each of the two bands.¹⁹ A similar condition prevails among the Navajo according to Goddard,²⁰ although the Franciscan Fathers state that in early days the tribe was represented by twelve chiefs, who assembled in council.²¹ This latter appears rather mythical, especially in its legendary formalization, and it would appear more probable that a condition of independent bands occasionally uniting, then as now, characterized the Navajo. The Pueblo-dwelling peoples as far back as data are obtainable, appear to have been organized in town units, under a priestly hierarchy.²² As a rule the individual Pueblos seem, save for temporary alliances, to have been largely independent. Passing beyond the area under consideration, to the north and east, the typical nomadic tribes of the Plains are encountered, such as the Kiowa, Comanche, Cheyenne and Arapaho, all of which were quite strongly united and warlike groups.²³

¹⁷ Russel, 1904, p. 196.

¹⁸ Bourke, 1890, p. 119; Stephen, 1893, p. 349.

¹⁹ Goddard, 1921, p. 169.

²⁰ Ibid.

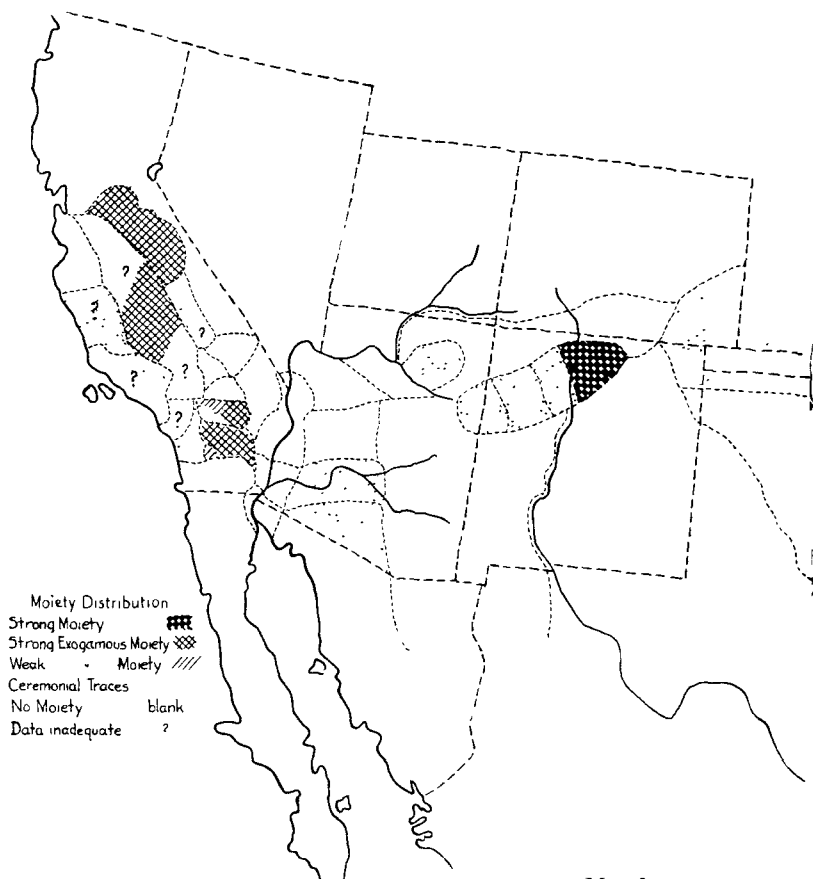
²¹ 1910, p. 422.

²² Goddard, 1921, p. 99.

²³ Wissler, 1917, p. 208.

PHRATRY AND MOIETY

The northernmost California people possessing the moiety organization are the Miwok. These divisions were called respectively "land" and "water", were strictly exogamous in theory and probably in practice, until modern Caucasian influences broke



MAP 2

down the rules. The northern Miwok seem to have been peripheral to this system compared to the southerly groups.²⁴ All nature in theory was divided between the two, and as a result among other natural phenomena, we find all birds and animals thus divided. The division of these was arbitrary, many land animals belonging

²⁴ Kroeber, 1925, p. 45.

to the water moiety, and vice versa.²⁵ All individual names applied indirectly to objects classified in the moiety and as such were vaguely totemic.²⁵ Reciprocal functions between the moieties occurred in the funeral, mourning ceremony, girls' puberty ceremony and the ahana dance. In the ceremonies the southern Sierra Miwok indicated moiety by means of painting the face, the land moiety being indicated by stripes, the water moiety by spots.²⁵ The southwestern neighbors of the Miwok, the Yokuts, possessed the same moiety organization in the majority of their bands on which we have data. Among certain of the southern Sierra groups it does not appear so far as is now known.²⁶ In regard to the majority of the northern hill and central valley Yokuts the main characteristics of the Miwok moiety appear: reciprocity, animal association with the moiety, moiety paints, and among the Tachi Yokuts a dual or moiety chieftainship is indicated.²⁶ The Yokut names appear to be meaningless but a totem or "pet" animal is inherited from the father instead. The moieties are called "upstream" and "downstream", are exogamous, and acquired in the paternal line.²⁶

The eastern Shoshonean neighbors of the Yokuts, the Western Mono, possess a moiety organization while the Eastern Mono do not.²⁷ The moiety of the Western Mono is patrilineal, but not exogamous, and each moiety is subdivided into two non-exogamous phratries. Associated with the moieties, and necessarily with the phratries, are certain birds and animals which are passed from father to son as "pets" or totems. As only the North Fork division of the Western Mono have been reported on, this condition of subdivided non-exogamous moieties among the Mono is not clear, and must await further investigation. The North Fork Mono, like the Tachi Yokuts, are reported to have a dual or moiety chieftainship; and reciprocity in funeral and mourning ceremonies occurs between the phratries rather than the moieties.²⁸

The coastal peoples of southern California in this regard, as in most other matters of detailed ethnology, present almost an

²⁵ Gifford, 1916a, pp. 142-146.

²⁶ Kroeber, 1925, pp. 493, 494.

²⁷ Gifford, 1916b, p. 294.

²⁸ Gifford, 1916a, pp. 293-294.

unknown quantity to the problem. Through early Caucasian and Mission influences the coastal peoples such as the Chumash, probably the most highly developed groups of the region, have vanished; leaving behind almost no knowledge of their society, save for tantalizingly suggestive and equally fragmentary comments from their white contemporaries.²⁹ I am told by Mr. E. W. Gifford that Mr. J. P. Harrington stated a moiety organization occurred among the Chumash. Mr. Harrington has done ethnologic work with some of the very few survivors of these people, but further efforts to gain more information from him have been unavailing. The Salinans to the north of the Chumash were divided into moieties characterized by a bear and deer "totem".³⁰ Brief as these statements are, they form important links in tracing out the spread of the moiety idea.

For the Gabrielino and their neighbors, the Juaneño and San Fernandeño, we have no direct evidence, although I have been told by neighboring Serrano and Cahuilla that the former of the three had a "wildcat" and "coyote" division.³¹ Such evidence is, however, next to worthless. Among the Luiseño the moiety is practically non-existent, but there was at Saboba among a prevailing Luiseño population a division into a wildcat and coyote moiety.³² This occurrence was verified by Luiseño at Rincon who agreed that such a condition existed at Saboba but not among themselves. No definite traces of a dual organization could be discovered among any other Luiseño, but a myth of definite Luiseño provenience recorded by Du Bois, tells of a contest between the "uplanders of the east" and the "westerners of the coast",³³ which brings in a division of the animals among the contestants, some belonging to one and some to the other division. This tale would appear to be either a borrowing, or a reflection of a former division among the Luiseño. It is worth noting that the Luiseño word *paha*, used by the Cahuilla also, means "red

²⁹ Kroeber, 1925, pp. 550-551.

³⁰ Mason, 1912, p. 189.

³¹ The coyote or wild cat skin representing Chinigchinich, mentioned by Boscana, 1846, p. 259, may bear this out.

³² Gifford, 1918, p. 211.

³³ Du Bois, 1908, p. 148, also Kroeber, 1925, p. 676.

racer" (*Coluber flagellum*.) The paha is the ceremonial assistant and is painted vertically, half red and half black, on the theory that the male snake is red and the female black.³⁴

The Serrano, Cahuilla (all three divisions) and the Cupeño, were all divided into moieties, called respectively "wild cat" and "coyote". Among the Serrano, definite reciprocity occurred in regard to funerals and mourning ceremonies. There are trace of reciprocity to be found among the Pass and Mountain Cahuilla south of the Serrano, and it occurred quite definitely among the Cupeño. The Desert Cahuilla had no rules of moiety reciprocity whatsoever, although the custom of calling in another clan with whom the clan giving the ceremony was much intermarried brought about natural rather than enforced reciprocity through exogamy. Among the Serrano, Cupeño, Pass and Mountain Cahuilla, reciprocity was limited to ceremonies connected with death, mourning, or puberty rites. The Desert Cahuilla distinguished a girl of the "wildcat" moiety at the adolescence ceremony, by the use of spotted paint. The Cupeño distinguished girls at such ceremonies by spotted cheek designs for the wildcat moiety and striped designs for the coyote moiety. The Luiseño had both types of face painting but they were used in separate ceremonies. For the other groups no moiety paints were remembered. The Desert Cahuilla in theory and practice observed strict moiety exogamy. The two other Cahuilla groups observed it as a rule, but actual cases show considerable laxity in observance, especially among the Cahuilla of the San Geronimo Pass. The Serrano and Cupeño both had definite rules of moiety exogamy, but especially in regard to marriages outside their dialectic group, they were quite lax.

None of the Plateau or Kern River Shoshoneans, with the exception of the Western Mono, seem to have possessed any sort of a moiety division. This includes the Chemehuevi, Kawaiisu, Tübatulabal, probably the Koso, and the Eastern Mono.³⁵

³⁴ The theory may be based on the fact that in Arizona and lower California a red and a black phase of *Coluber flagellum piceus* occurs. It is unknown for California north of Mexico. There is no sex distinction in color. Van Denburgh, 1922, p. 669.

³⁵ Gifford, 1918, pp. 215-216.

This condition also prevails for the Shoshoneans of the Great Basin so far as they are known.³⁶ The Yuman Diegueño, Mohave, Yuma, Cocopa, and Havasupai likewise show no traces of a moiety division.

East of the Colorado River the moiety first appears among the Pima and Papago. That a moiety division of patrilineal descent occurred seems clear, but the alignment of clans in moieties given by the various authorities is decidedly variable. These discrepancies are shown by the following lists. The clan names on which all authorities agree, are taken from Russell,³⁷ for the Pima the data are as follows:

MOIETY ALIGNMENT

	<i>Russell</i> ³⁷	<i>Curtis</i> ³⁸
<i>Clan Names</i>		
Ā'kol	Vulture or Red People (Ants)	?
A'pap	Vulture or Red People (Ants)	Coyote
A puki	Vulture or Red People (Ants)	Coyote
Ma'am	Coyote or White People (Ants)	Buzzard
Va'af	Coyote or White People (Ants)	Buzzard

For the Papago we have the following list:

MOIETY ALIGNMENT

	<i>Russell</i> ³⁹	<i>Curtis</i> ⁴⁰	<i>Dolores</i> ⁴¹	<i>Lumholtz</i> ⁴²
<i>Clan Names</i>				
Ā'kol	Vulture or Red Ants	?	Buzzard	White Ants
A'pap	Vulture or Red Ants	Coyote	Coyote	White Ants
A puki	Vulture or Red Ants	Coyote	?	White Ants
Ma'am	Coyote or White Ants	Buzzard	Red	Red Ants
Va'af	Coyote or White Ants	Buzzard	White	Red Ants

The lack of agreement is only too obvious, and shows the need of further investigation in regard to the real situation in Pima and Papago society before exact comparisons can be made.

³⁶ Lowie, 1924, p. 283.

³⁷ Russell, 1904, p. 197.

³⁸ Curtis, 1908, p. 9.

³⁹ Russell, 1904, p. 197.

⁴⁰ Curtis, 1908, p. 32.

⁴¹ See Gifford, 1918, p. 176.

⁴² Lumholtz, 1912, p. 354.

Goddard has given a list of these clans and their moiety alignment,⁴³ but appears to have followed Russell.

There is no rule of moiety exogamy at present, nor according to all information does there appear to have been such a rule within historic times.⁴⁴ Members of salt-gathering expeditions "formerly painted their faces the color of the division to which they belonged". Likewise all animals having red about them belonged to the red people.⁴⁵ This is true of the Papago, and probably of the Pima.⁴⁶ Among the Papago the "white" people are most numerous, the "red" people being in a minority. According to their myths the "red" people once owned the country but they were conquered and nearly exterminated by the "white" people.⁴⁵ It is apparent that the exact nature of the moiety, its characteristic paints, and actual application to society may only be determined by further study.

No exogamous moiety division occurs among the Navajo or Apache so far as present data are concerned. The Jicarilla Apache have a moiety division for pleasurable rivalry in certain games, but no mention of exogamy is made.⁴⁶ None of the Eastern Apache as far as known have clans or other divisions regulating marriage.⁴⁷ The Western Apache, however, have exogamous clans which are for the most part grouped in unnamed but exogamous phratries.⁴⁷ The clans are matrilineal in descent,⁴⁸ as are the phratries.

The Navajo have exogamous matrilineal clans, which are similarly grouped in unnamed exogamous phratries.⁴⁹ According to Reichard these clan groups are quite evenly divided over the Navajo country, while the clans themselves are definitely localized.⁵⁰ This agrees with the interpretation of Mathews⁵¹ and

⁴³ Goddard, 1921, p. 132.

⁴⁴ Russell, 1904, p. 197.

⁴⁵ Lumholtz, 1912, p. 354.

⁴⁶ Wissler, 1917, p. 159.

⁴⁷ Goddard, 1921, p. 166.

⁴⁸ Bourke, 1890, p. 118.

⁴⁹ Goddard, 1921, p. 167.

⁵⁰ Letter of Jan. 27, 1926.

⁵¹ 1890, p. 104.

Stephen.⁵² "Clan groups", as Reichard calls these larger exogamous unions of clans, seems a more exact definition than phratries, considering that they are unnamed. So far as the literature is concerned, these larger groups do not seem to have been associated with animals, nor did they have distinctive paints. The same may be said for the Apache.

In myth and ceremony there are traces of a moiety division among the Hopi,⁵³ and at Zuñi,⁵⁴ but in neither case is there at present any idea of descent or alignment of clans according to moiety. Save for the mythical division of the Dogwood Clan into Raven and Macaw sub-clans, Stevenson makes no mention of any moiety idea in her account of Zuñi.⁵⁵ Cushing describes a moiety division of the whole Zuñi people into a Macaw, south or summer people, and a raven, north or winter people, in the creation myth recorded by him.⁵⁶ Kroeber⁵⁷ obtained no evidence for any actual moiety at Zuñi, and favors Stevenson's mythical account as more accurate than that of Cushing.

Stevenson notes that each of the fourteen A'shiwanni priests has two pots of paint, one of black earth, and one of red earth, which are supposed to have come from the undermost world. Prayer sticks offered for cold rain and snow were colored with the black paint, and those for summer rain with the red paint.⁵⁸ Parsons believes that at Zuñi the winter ceremonies of the curing societies and the summer ceremonies of the rain priests; the seasonal distinction between two sets of sacred clowns; the winter cacique (rain priest of the north) and summer cacique (speaker to the sun); as well as the double grouping of the six kivas in regard to war cult and "santu" ceremonials, are all reflections of the moiety idea, which is more definitely expressed among the Rio Grande Pueblos.⁵⁹ All recent authorities seem to agree that moiety exogamy is definitely lacking among all of the Pueblos.

⁵² 1893, p. 349.

⁵³ Voth, 1901, p. 152n. 4.

⁵⁴ Parsons 1924, p. 336.

⁵⁵ Stevenson, 1904, p. 40.

⁵⁶ 1896, p. 384.

⁵⁷ 1919, p. 94.

⁵⁸ Stevenson, 1904, p. 172.

⁵⁹ 1923, p. 229.

A system of linked clans, or unnamed phratries, occurs among the Hopi, at Zuñi, and to a lesser extent among all the western Pueblos. According to Fewkes, the Hopi have seven such "phratries",⁶⁰ but he gives a list of fourteen according to clan traditions.⁶¹ Curtis lists twelve groups of linked clans among the Hopi.⁶² Kroeber has demonstrated that this linkage appears much the same for all the Pueblos, and notes that in each clan there is a tendency toward polarity, repeated whenever that clan occurs.⁶³ Parsons does not find this polarity among Laguna clans, and appears to doubt the application of Kroeber's pattern to the eastern Pueblos.⁶⁴ Such linked clans do not seem to limit marriage choice among the members.

The Western Keresan pueblos have a moiety classification that enters considerably into their ceremonial life. At Laguna, during the war and "santu" dances, certain of the clans are assigned to buildings on one side of the plaza, the remainder to the other side. They form the West group and the East group. One division of the k'atsina dancers is assigned to the cloud spirits of the North, identified with winter, another is assigned to the cloud spirits of the South, associated with summer.⁶⁵ A man may dance in both of these groups if his father's clan is in the opposite group from that of his mother; a fact that emphasizes the non-exogamous nature of the ceremonial grouping. There is no clear association of kiva with moiety, but the two buildings from which the groups come, strongly suggests the eastern pueblo pattern of double kivas.⁶⁶

The Eastern Keresan pueblos have the double kiva system for the two moieties. The latter are called Turquoise and Squash⁶⁷ and are associated with the ideas of summer and winter. At Jemez the same pattern prevails.⁶⁷ Stevenson in her account of Sia

⁶⁰ See Hodge, 1910, p. 562.

⁶¹ 1900, p. 582.

⁶² See Benedict, 1925, p. 459.

⁶³ 1923, pp. 211, 232.

⁶⁴ 1919, pp. 135-145.

⁶⁵ Parsons, 1923, p. 229.

⁶⁶ *Ibid.*, pp. 231-253.

⁶⁷ Parsons, 1924, pp. 337-38.

makes no mention of the moiety, but notes the small importance attached to clan affiliations there, as compared to Zuñi.⁶⁸ An analysis of Starr's census of Cochiti,⁶⁹ leads Kroeber to the conclusion that moieties or phratries made no difference in actual marriages between clans.⁷⁰ Among the Eastern Keresan, the moiety is inherited in the male line, the woman often joining the kiva of her husband.⁶⁷

Among the Tewa, especially at Santa Clara and San Ildefonso, there is a strong tendency for the moieties to be endogamous.⁶⁷ The moieties are named for summer and winter.⁷¹ At San Juan the moiety is the outstanding social group, taking the place held by the clan in the social consciousness of the Zuñi and Hopi.⁷² Among the eastern Tewa, and at Taos, there is a double town chieftaincy, one chief having control in summer, the other in winter.⁷³ Among the southern Tigua, at Isleta, the two moieties are called "black eyes" and "red eyes", ceremonial clowns of the first being painted black, of the second red and white, thus giving the moiety names.⁷⁴ At present there are no clans at Taos,⁷⁵ the patrilineal moiety apparently having taken over all ceremonial functions. It has been stated that the general Pueblo classification of clans with moiety gives the Winter people the Day, Bear, Lizard and Eagle clans, while the Geese, Corn, Chaparral Cock, and Parrot clans are usually Summer people. With the former is associated the Flint society, with the latter the Fire society.⁷⁶ In the present state of knowledge I presume this classification to be more a suggestion than an established fact. In regard to the more esoteric features of the moiety among the Rio Grande pueblos there seems to be little on record.

While this briefly sums up the available information on the moiety in the area under consideration, it is well to note that a

⁶⁸ Stevenson, 1889, p. 112.

⁶⁹ Starr, 1899.

⁷⁰ Kroeber, 1919, p. 97.

⁷¹ Parsons, 1921, p. 156 n. 3.

⁷² Parsons, 1924, p. 336.

⁷³ *Ibid.*, pp. 337-38.

⁷⁴ Parsons, 1921, p. 156 n. 3.

⁷⁵ Parsons, 1924, p. 336.

⁷⁶ Parsons, 1918, p. 60.

moiety classification varying in degree of importance, exists among neighboring Plain's tribes such as the Kiowa⁷⁷ and Pawnee,⁷⁸ and farther still to the north and east among the Omaha, Ponca, Osage, Kansas, Ouapaw, Oto, Iowa, Missouri and Winnebago.⁷⁹

LINEAGE AND CLAN

Beside the moiety organization, previously described, the Miwok of central California were organized in small male lineages which were autonomous landowning units. The lineage territories were held by the group in common and the patriarchal chieftainship descended normally from father to eldest son. As the lineage was composed of closely related kinsfolk it was absolutely exogamous, men of the lineage bringing their wives to their own hamlet, daughters of the lineage going to the hamlet of their husbands. The lineage name was always a place name, and though in the valleys Caucasian influences tended to amalgamate the lineages into villages, the old lineage place names are still remembered, while the groups remaining in the mountains have clung to their own territories until recent times.⁸⁰ The North Fork Mono, south of the Miwok, were also organized into male lineages in addition to the phratry and moiety grouping already discussed. What the exact relationship between these three social groupings was, may only be determined by adequate genealogical data.⁸¹

The central Yokuts, especially those of the foothills, seem to have been grouped in villages having two or three chiefs of equal power. Within these villages were paternal families, with meaningless personal names inherited in the male line. Each one of these families had an animal which was called its "posha",⁸² apparently akin to the "pet" animals of the Mono phratries previously described. Save in rare cases where the family of a chief sometimes kept an eagle, prairie falcon or bear cub as its posha, these animals

⁷⁷ Mooney, 1898, p. 227.

⁷⁸ Murie, 1914, p. 642.

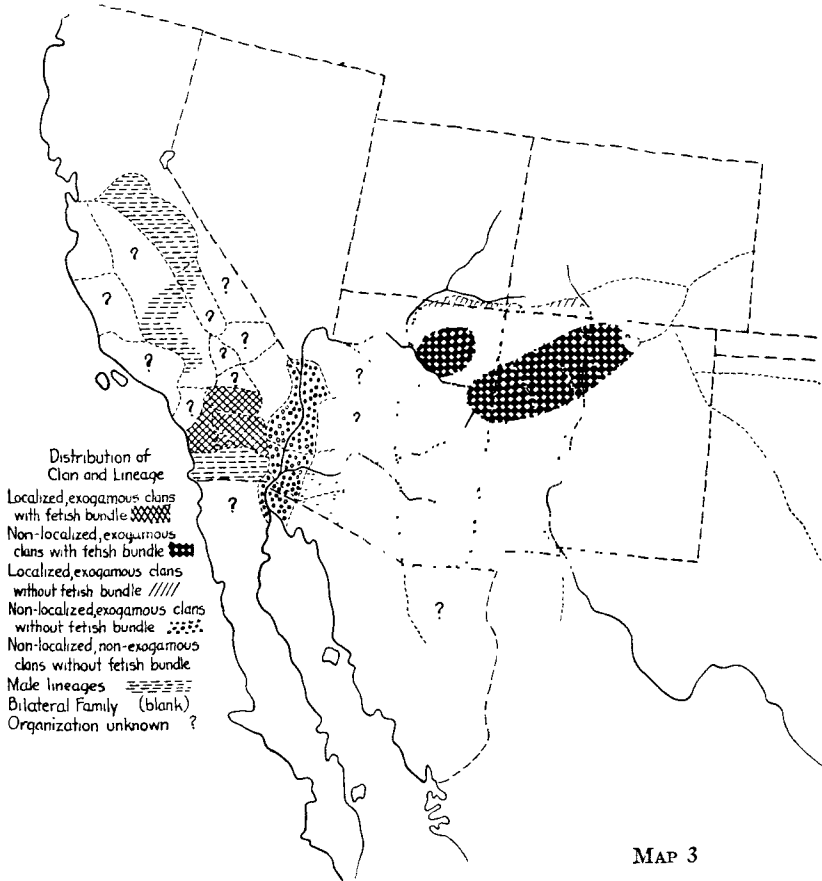
⁷⁹ Radin, 1915, pp. 1-8.

⁸⁰ Gifford, 1926.

⁸¹ *Ibid.*,

⁸² Kroeber, 1925, p. 494, translates this as "dog".

were not actually kept by the families. They did not, however, kill or eat their posha. While actual blood families were exogamous as far as kin could be traced, the possession of the same posha by two distinct families did not bar marriage between them. The central Yokuts had no family ownership of land as far as known,



and even the village groups had no clearly defined boundaries. The various southern villages seemed on the whole to have maintained friendly relations and more or less commonly used territories. North of Tulare Lake there seems to have been a stronger feeling of village boundaries, and against trespass by outsiders.⁸³

⁸³ Gayton, 1926, field notes.

Further work in this area, as among the Mono, should when such intervening groups as still exist are known, give a more coherent and detailed picture of society in the great southern valley of California.

No details of social organization among the Salinan peoples are extant save for the bare mention of the moiety.⁸⁴ Portola's estimate of the Chumash, Esselen, and Costanoan villages between the sites of San Luis Obispo and Monterey in 1769, gives an average of over 100 people in each of the 10 towns seen.⁸⁵ As for the Chumash nothing is on record of their social organization other than lists of the coast and island villages visited by Cabrillo, and later Spanish explorers.⁸⁶ For the Gabrielino, Juaneño and San Fernandeño, we have the interesting but not detailed accounts of Boscana and Hugo Reid. The former, speaking of the Juaneño, and probably Gabrielino, mentions individual villages and rancherías, each with its chief, and in which most of the people were related.⁸⁷ Speaking of the Indians of Los Angeles County, Reid states that there were approximately 40 villages in aboriginal times, and states that there were from 500 to 1000 huts in each village.⁸⁸ This probably applies to the Juaneño, San Fernandeño and Gabrielino. The details of village government given by him, seem identical with those given by Boscana, and I am inclined to believe that these large villages he speaks of are the result of native exaggeration. He carefully notes that at the time he writes no such conditions exist and that only a few survivors remain. Other evidences to be discussed later seem to indicate a similar if not identical condition existing among the aforementioned groups and the Luiseño, save that the village groupings of the coastal peoples were in all probability larger.

To what degree the Luiseño in pre-Mission times were grouped in villages is not clear. A village at San Luis Rey in post-Mission times, composed of twenty families or clans under one hereditary

⁸⁴ Mason, 1912, p. 189.

⁸⁵ Kroeber, 1925, p. 547.

⁸⁶ *Ibid.*, pp. 552-56.

⁸⁷ Boscana, 1846, pp. 264-67.

⁸⁸ Reid, 1852, letters no. 1 and 3.

chief, has been recorded;⁸⁹ and a somewhat similar case at Saboba as well.⁹⁰ I am inclined to believe that this condition was largely due to modern influences for the following reasons. In the eastern and mountainous parts of the Luiseño territory, notably at La Jolla, the Luiseño were grouped, even in post-Mission times, in small family units or male lineages each owning a certain territory. I have preferred calling these "clans", however, because the central feature of their organization was a patriarchal chief or priest, distinguished by living in the ceremonial house and having in his possession a sacred bundle of reed-matting called "ma'swut," containing ceremonial paraphernalia and objects sacred to the clan. Thus in addition to kinship such a group was further united by the important clan ceremonial bundle concept. In such a clan group a woman always retained her own lineage or clan name but was ceremonially affiliated with the activities of her husband's clan.

In the mountains there appears to have been a tendency for these individual groups to exist as autonomous units for a considerable time after the decay of the Missions. Genealogies indicate that about every three generations the lineage tended to divide, a branch moving away to a new territory and acquiring a new name, usually a nickname applicable to some important individual or individuals in the group. A new ceremonial house was built, a new bundle acquired, and the new group became an autonomous unit, although the feeling of relationship and consequent avoidance of marriage with the parent group persisted. Thus the groups were always quite small, save in the more habitable valley areas where larger clans composed of many collateral branches of the original lineage probably existed. After the Mission period a new influence came in, likewise based on the ceremonial bundle, in the formation of "parties."⁹¹ Small clans decimated in numbers, lacking efficient ceremonial leaders or paraphernalia, tended to merge with more active clans possessing powerful ma'swut, into "parties". These were mainly cere-

⁸⁹ Gifford, 1916a, p. 208.

⁹⁰ Ibid., p. 213.

⁹¹ Ibid., p. 202.

monial groups, composed of once individual clans, under one chief or "*not*", but they are not exogamous as were the clans.⁹² The "parties" would appear as the logical outcome of the powerful ceremonial leaders or chiefs possessing *ma'swut*, drawing into their organizations the fragmentary clans released from the Missions. At the present time these "parties" are very loose affairs, and merely serve to maintain the fragments of Luiseño ceremonialism that still persist. I am inclined to believe that the "parties" as such, are entirely post-Mission affairs. Previous to the Mission period, however, the localized autonomous clan group, named as a rule for natural objects, or verbal derivatives of natural objects, and composed of one or more lineages appears to have been the basis of Luiseño society.

The same state of affairs existed among the Cupeño who were, at least in Mission and post-Mission times, grouped around the Warner's Hot Springs. Five of the Cupeño clans were each composed of one lineage while the sixth clan included three separate lineages. Each lineage, however, had individual food-gathering territories in the mountains back of the springs. The independent clans each had a chief, a ceremonial house, and a *ma'swut* bundle. The Serrano clans were very similar but the equally important clan fetish concept was rather complicated due to more complete moiety reciprocity in ceremonies.

The Mountain and Pass divisions of the Cahuilla were in aboriginal times apparently grouped into localized and independent clans, each owning various food-gathering areas, and each possessing a clan head or priest, a *ma'swut* bundle, and a clan ceremonial house. Genealogies indicate that these clans usually consisted of one male lineage, but as this lineage included collateral male lines for four or five generations the groups were fairly large, consisting usually of fifty or more persons. The kinship system of the Cahuilla indicates that they reckoned lineal descent back five generations from the speaker.⁹³ The term for great-great-grandfather, *nañaa*, being translated "from the beginning". Thus collateral branches four or five generations removed tended

⁹² Gifford, 1916a, p. 213.

⁹³ Gifford, 1922, p. 56.

to form new clans, which naturally belonged to the moiety of the parent stock, but in the course of time lost the sense of actual kinship. The historic Luiseño clans as has been stated, seem only to have included collateral branches for three generations back, and as a result the groups were smaller. This bears out Gifford's surmise that the Luiseño may have represented a more finely spun fabric of clan organization than did the Cahuilla.⁹⁴ Even in aboriginal times it is extremely probable that certain of the more favorably located Cahuilla clans, for example, that at Palm Springs, may have been composed as they seem to be at present, of several lineages. Where this occurs it does not seem in any way to invalidate the rule of clan exogamy. The Cahuilla clans seem to have place names in the majority of cases, but natural objects or their derivatives as among the Luiseño appear in many of their names.

The same condition of independent clans held for the Desert Cahuilla, whose clans were likewise united by the same kinship and ceremonial bonds. Scarcity of water on the desert, however, seems to have brought several clans together, forming villages at the available wells and water holes. Up to the present the Desert Cahuilla have clung to their independent clan organization for ceremonial purposes, although modern reservation and farming conditions have caused new land-holding arrangements. The Mountain Cahuilla, and certain of the Pass Cahuilla clans, brought much earlier under Caucasian influence,⁹⁵ in many cases formed "parties" similar to those among the Luiseño. The decimated or ceremonially disorganized clans tending to affiliate themselves with ceremonially intact and active clans. The basis of Luiseño, Cahuilla, Cupeño, and Serrano social organization, however, seems to be the localized male lineage, augmented by the power of the clan priest, clan ceremonial bundle, and clan ceremonial house, a complex which will be discussed hereafter.

⁹⁴ Gifford, 1916a, p. 202.

⁹⁵ Detailed study of the more westerly of these peoples clearly shows the strong centralizing influence of the Mission Fathers and Mexican government who, desiring responsible native officials, exalted and gave power to certain prominent clan heads at the expense of the others. An almost tribal organization resulted.

The units of Tübatulabal, Kawaiisu, and Panamint social organization are not known in detail, but would appear to resemble the Chemehuevi and other Plateau Shoshoneans in a more or less loose grouping into bands. Whether the lineage is at the basis of their organization is not known, but no clans have been reported for them. Their northeasterly neighbors of the Basin, the Paviotso, Ute, Moapa and Shivwits Paiute had neither clans nor lineages, the bilateral family forming the only unit within the band.⁹⁶ It is probable that the more southwesterly members of this Basin group have much the same organization, but the extent to which western influences have affected them may only be known when more is on record concerning them.

Spier has shown the unilateral family to be the outstanding unit of Yuman Diegueño social organization,⁹⁷ thus they resemble their Luiseno and Cupeño neighbors in possessing male lineages.⁹⁸ They seem also, to have had in part the group ceremonial priest, bundle and house complex common to the latter.⁹⁹ The Yuman peoples of the Colorado River have a quite different clan organization, and while it has been suggested that the male lineage may be at the basis of their present system,¹⁰⁰ there seems hardly enough evidence at hand to make this more than guesswork. The Mohave, Yuman, Cocopa and probably others of the down-river Yuman tribes share a system of patrilineal exogamous nameless clans of totemic reference.¹⁰¹ All the women born in a clan bear an identical name, although they may also have other nicknames. This clan name has totemic import, and indirectly alludes to some natural object, such as sun, moon, wind, beaver, quail, etc. Apparently these derivative clan names are archaic stems, disguised allusions or equivalents of the objects connoted. Totemic taboos are slight, although the Cocopa do not kill their totems.¹⁰¹ The clans do not enter into religious activities as far

⁹⁶ Lowie, 1924, p. 283. Also applicable to the Northern Shoshone. Lowie, 1909, p. 206.

⁹⁷ 1923, p. 299.

⁹⁸ Gifford, 1926.

⁹⁹ Waterman, 1910, p. 281.

¹⁰⁰ Gifford, 1926.

¹⁰¹ Kroeber, 1925, pp. 741-44.

as known, and the entire system apparently rests lightly on the cults or actual organization of society. The clan members are scattered over the tribal territory, and while little groups of kinsmen, and therefore of clansmen, live at favorable sites during shifting periods,¹⁰¹ the clans as a whole do not appear to be localized. While the house is ritually significant among the Yuma and Mohave in myth and song, it is not employed to any extent in actual ceremonies.¹⁰² There is no trace of priest or sacred bundle.¹⁰³

If we may judge from the Havasupai, on whom we have information,¹⁰⁴ the up-river Yuman tribes, such as the Yavapai and Walapai, have no clan or gentile organization of any sort. The two latter tribes, however, being nearer the Mohave, may reflect their social institutions more than do the Havasupai. The basis of Havasupai life is the bilateral family, there is no indication of any other than blood family kinship. Groups of relatives associated through patrilocal residence are merged into camps within the village, but within these the married couple and their progeny are the unit. Land and chieftainship are inherited in the male line. There is no trace of a ceremonial group house,¹⁰⁵ group priest or sacred bundle concept.

The Pima and Papago east of the Colorado River, have somewhat the same clan organization as the Mohave. These clans which have been previously listed (p.11) are five in number. The names of the clans have in the main lost their meanings but they appear to have been totemic.¹⁰⁶ These names descend in the patrilineal line and apply to the father.¹⁰⁷ There is no clan exogamy, nor any evidences of clan organization.¹⁰⁶ According to Lumholtz, wives joined the clan of their husband.¹⁰⁷ To call these clans rather than phratries is purely arbitrary, and largely due to the fact that the smaller units which may make up these "clans" are

¹⁰² Kroeber, 1925, p. 794.

¹⁰³ Ibid. p. 795.

¹⁰⁴ Spier, 1926 MSS.

¹⁰⁵ Neither the chief's house nor the small sweat-lodge among the Havasupai is used for ceremonial purposes.

¹⁰⁶ Russell, 1904, p. 197; Curtis, 1908, p. 32.

¹⁰⁷ Curtis, 1908, p. 9; Lumholtz, 1912, p. 354.

not known at present, whereas in the case of the North Fork Mono (see p. 16) it has been demonstrated that the "phratries" are made up of male lineages. Among the Papago the villages were exogamous, although all clan groups might occur in each village.¹⁰⁸ There is, moreover, a sacred ceremonial lodge, priest, and sacred bundle in each village¹⁰⁹ as nearly as can be ascertained from the description given by Lumholtz. In the face of this it is hard to escape the belief that we have here a lineage or localized clan organization, as well as a loose inter-village phratral system.

Material on the social organization of the Athapascan peoples of the southwest is not overly clear or abundant, but enough is extant to show the general nature of their clans. According to Goddard¹¹⁰ the Eastern Apache, as far as known, have no clans, while the Western Apache are organized in about thirty or more. These latter are exogamous and to a certain extent control the social duties of their members. Clan names are usually place names, and among the White Mountain Apache the clans do appear to be somewhat localized.¹¹⁰ The clans are matrilineal, and in the majority of cases localization exists more in theory than actually. Certain of the political bands are likewise associated in the Apache mind with certain clans. In about fourteen cases the clan names of the Apache coincide with those of the Navajo,¹¹¹ although the same territories do not seem to be implied in the name. Only one clan, named for the dragon fly, has any animalistic connotation although a few seem slightly totemic.¹¹¹ As has already been stated, they are more or less grouped in exogamous unnamed phratries.¹¹¹

The clans of the Navajo are very much the same as those of the Western Apache, and are about 40 or 50 in number, being exogamous and matrilineal in descent.¹¹⁰ Matrilocal residence is the rule. Mathews and Stephen both state that localization is one of the striking characters of the Navajo clan.¹¹² Reichard¹¹³

¹⁰⁸ Gifford, 1916a, p. 176.

¹⁰⁹ 1912, pp. 49-52.

¹¹⁰ Goddard, 1921, p. 166.

¹¹¹ Bourke, 1890, p. 111.

¹¹² Mathews, 1890, p. 104, Stephen, 1893, p. 349.

¹¹³ Letter of Jan. 27, 1926.

agrees as to localization, and states that place names are usual, only a few clans have names such as sun or turkey, which may be Pueblo in origin. The Navajo do not believe in a common clan ancestress, but in a common local group as the basis of each clan. As among the Western Apache the clans are grouped, the groups being quite evenly distributed over the Navajo country.¹¹⁴ It is interesting to note that in their mythology each clan had a "pet" animal that accompanied it on its journeys.¹¹⁵ Among the Navajo there is no clan priest, no sacred bundle, or permanent ceremonial house.¹¹⁴ The same apparently applies to the Apache.

The exact nature of the Pueblo clan is a somewhat disputed matter but certain general characteristics stand out. The clans are exogamous, usually matrilineal in descent and totemic as to name. The same clan names occur in many of the pueblos, and while all clans are not represented in each, where clans of the same name occur in different pueblos the members are usually considered as ceremonially related. The main ceremonies of the pueblos are carried on by groups (fraternities) of priests, not directly by the clans. Among the Hopi these ceremonies are said to be motivated mainly by a desire to bring rain, at Zuñi for both rain-making and curing, and among the eastern pueblos mainly for curing.¹¹⁶ Native theory, expressed in the clan migration legends, deals with each clan as a once independent unit, and this viewpoint was largely taken over by early investigators in the area.¹¹⁷ At present the clans appear as integral parts of the entire Pueblo social structure, rather than independent autonomous units loosely fused by town or communal dwelling. This viewpoint was to a large extent brought out by Kroeber's analysis of modern conditions in Zuñi.¹¹⁸ Similar methods employed by Parsons, Lowie, and others, seem to shift the emphasis from the clan as a whole to the individual matrilineal families, as the ceremonial units of Pueblo society.¹¹⁹ The problem is ex-

¹¹⁴ Letter of Jan. 27, 1926.

¹¹⁵ Mathews, 1890, p. 106; Franciscan Fathers, 1910, p. 424.

¹¹⁶ Parsons, 1920a, p. 88, n. 1.

¹¹⁷ Mindeleff, V. 1891; Hodge, 1896; Fewkes, 1900, etc.

¹¹⁸ Kroeber, 1919.

¹¹⁹ Parsons, 1922; Lowie, field notes, 1916.

tremely complex, but a brief survey of clan status in the various pueblo groups may be of value.

It was at one time believed that the Hopi clans at Oraibi were definitely localized in the town¹²⁰ but later analysis of the data leads to a negative rather than a positive conclusion.¹²¹ A similar analysis of the data presented by Fewkes¹²² on association between clans and fraternities of the same name, leads Kroeber to the belief that the membership in the fraternities is not made up of representatives of clans of the same name, any more than those of other clans.¹²³ Lowie, on the basis of censuses obtained on the First and Second Mesas, agrees with Kroeber's general conclusions, but points out the important fact that the preferential (similarly named) clan supplied the head priest, and that in certain cases all such clansmen are conceived as at least potential participants in the ceremonies of such a fraternity. He is strongly impressed with the connection between fraternity officers and membership in certain clans. The fact that entrance into the Snake fraternity, for example, may be effected by any one desiring to be cured of snake bite, clearly indicates why all clans may be represented in any one of the curing fraternities.¹²⁴ Offices, both ceremonial and political, are associated with the clans through the principle of matrilineal descent,¹²⁴ that is, an office descends from brother to brother or maternal uncle to sister's son within what Goldenweiser calls a maternal family,¹²⁵ and I have called here a female lineage.¹²⁶ In the absence of matrilineal kin the privilege devolves on an unrelated clansman, and if none such exists, on some member of a linked clan. In regard to relation of lineage and family, Lowie found that of the thirteen Mishongnovi clans, there were six which coincided with single lineages, and of the remainder, the majority were composed of only two lineages.¹²⁷

¹²⁰ Mindeleff, C. 1900, pp. 105-108.

¹²¹ Kroeber, 1919, p. 103.

¹²² Fewkes, 1900, pp. 622-31.

¹²³ 1919, p. 152; also Parsons, 1919, p. 329.

¹²⁴ Field notes, 1916.

¹²⁵ 1914, p. 434.

¹²⁶ Gifford, 1926.

¹²⁷ Field notes, 1916.

Parsons, on the basis of independent research, coincides with this new interpretation, and adds the following details.

Each one of the maternal families has a name, a maternal or stock house where fetishes, masks etc., are kept, and a male head or chief together with a female head, "our oldest mother", as a Hopi will refer to her, the senior or representative woman of the stock house. The male head is also closely associated with this house. He is also the chief of any ceremony which is "handed" as the Hopi say, by the clan. In other words, a ceremony is primarily in charge of a maternal family or family connection, rather than of the clan as a whole.¹²⁸

It is further pointed out that these female lineages (maternal families) are stable organizations, while the clan of which they are part is socially unstable and subject to different combination in different towns, and even at different periods in the same town.¹²⁸ As a result, clan composition, and therefore clan linkage, appears to be a varying phenomenon and not uniform for all pueblos as Kroeber believed.¹²⁹ The entire question of clan linkage is, however, too complicated for analysis at the present time. It may be noted that among the Hopi the feeling of the equivalence among the linked clans is very strong, and appears to be largely due to a desire to share in certain clan ritualistic privileges.¹³⁰

All Hopi proper names have some reference to the clan totem of the person giving the name, not its possessor. This reference to the totem is often indirect. Such clan names apply not only to people but to kivas, pipes, etc.¹³¹ Curtis agrees that all Hopi names are clan-owned and are the property of the name-giver's clan, the majority being given by the clan of the father.¹³² The totemism of the Hopi clans is not very clear as to degree or nature. Lowie notes that the Butterfly clan had a winged fetish of cottonwood bark; the Horn clan, horned masks; the Snake clan, a bow with a snake skin tied to it; the Bear clan, a small stone bear effigy; and the Kachina clan, masks and fetishes resembling little children. The Rabbit clan was supposed to own all deer and rabbits; but aside from such distinctions little regard seems to be

¹²⁸ 1922, p. 284.

¹²⁹ Kroeber, 1919, pp. 135-145.

¹³⁰ Lowie, field notes, 1916.

¹³¹ Voth, 1905b, pp. 68-73.

¹³² See Benedict, 1925, p. 460.

paid to the totems of the various clans.¹³³ It has been noted that certain clans had special territories for hunting eagles.¹³⁴

Of the fifteen clans at Zuñi in 1916, the largest contained 400 people, the smallest 3 or 4. Marriage into the mother's clan was forbidden and into the father's clan disapproved. Such groupings of clans (phratries) as occurred had no social significance. The clans were not localized save in a fragmentary way due to household growth. There were no clan totems or taboos noted, and each clan appeared an equivalent unit, distinct from all others.¹³⁵ Kroeber also notes that certain houses were distinguished as clan name "having", and these often contained the clan fetish.¹³⁵ Parsons stresses this point of the clan house, and shows that while women are usually the keepers of the fetishes, men rather than women are supposed to know the songs and prayers associated with the fetish. There is a great reluctance to remove the fetish from a house as long as any women keepers are alive, but as men marry out of the house and households may become extinct, in some cases fetishes are kept by people "out of" the clan house. The tendency to leave the fetish in the clan house, however, seems to account for the cases of Rain priests and clan fetishes in different houses at Zuñi. The Rain priests at Zuñi are the outcome of the house fetish complex of the clan and the weather control and curing functions of the society or fraternity.¹³⁶ Assistants to ceremonial offices are chosen from the incumbent's household, which leads to family or household association with the societies.¹³⁶

Both Kroeber and Parsons emphasize the social importance of the family, as we know it, among the Zuñi, but the latter brings out the importance of the household (or female lineage), as an important unit within the exogamous clan of several lineages. The ceremonial importance of the clan is brought out by the fact that in Cushing's time the ruling priesthood was elected from the Parrot clan,¹³⁷ which also owns the ceremonially important salt

¹³³ Lowie, field notes, 1916.

¹³⁴ Lowie, 1920, p. 117.

¹³⁵ Kroeber, 1919, pp. 91-134.

¹³⁶ Parsons, 1923, pp. 226-228.

¹³⁷ Cushing, 1882, p. 187.

lake.¹³⁸ The exact degree to which ceremonial offices are inherited through clan, lineage, or blood family relationship at Zuñi, is not entirely clear, although it is quite probable that inheritance of the different positions may be along different lines.¹³⁹ The fact that the whole ceremonial life of the Pueblos is pervaded by kinship conceptions, is best shown by the rite of exchanging terms of relationship, noted among the Hopi,¹⁴⁰ at Zuñi,¹⁴¹ and probably applicable to some of the eastern pueblos as well. As among the Hopi, totemism at Zuñi is very obscure. It may be noted, however, that Parsons¹⁴² objects to Kroeber's statement¹⁴³ that there is no spiritual connection between the clan and the object or animal from which it derives its name. It is pointed out for example, that the Bear clan at Zuñi is associated with the war gods, who in turn are associated with the bear.¹⁴⁴ Also according to Cushing, there is a connection between the Eagle and Coyote clans and the same pair of prey gods.¹⁴⁵

The Western Keresan Pueblos (Acoma and Laguna) have maternal clans. At Laguna the clans are divided into the moieties,¹⁴⁶ but at Acoma this division is obscure.¹⁴⁷ While in theory the clans are exogamous, marriages into both father and mother's clan do occur. Residence is matrilocal in theory, but in reality quite frequently patrilocal.¹⁴⁸ For ceremonial purposes, changes of clan take place,¹⁴⁹ a thing not known for the western pueblos. At Laguna the clans formerly had senior members, usually men, but sometimes women. These clan elders each kept in a basket completely kernelled ears of corn, fetish animals, and terraced medicine bowls.¹⁵⁰ They directed the communal work of the clan

¹³⁸ Parsons, 1923, p. 225.

¹³⁹ Kroeber, 1919, p. 166.

¹⁴⁰ Voth, 1901, p. 82.

¹⁴¹ Parsons, 1917, p. 249.

¹⁴² Parsons, 1923, p. 213.

¹⁴³ Kroeber, 1919, p. 48.

¹⁴⁴ *Ibid.* p. 48.

¹⁴⁵ 1880, pp. 19, 31.

¹⁴⁶ Parsons, 1920b, p. 58, n. 2.

¹⁴⁷ *Ibid.* pp. 67-68.

¹⁴⁸ Parsons, 1923, pp. 175-176.

¹⁴⁹ *Ibid.* p. 207.

¹⁵⁰ *Ibid.* pp. 212-214.

and possessed knowledge of the ritual that was the basis of their leadership.¹⁵⁰ In cases of dispute in the clan it was carried to the oldest clan member, not necessarily the clan head, for settlement.¹⁵⁰ In the k'atsina cult certain masked impersonators belong to certain clans; leadership in the cult was vested in the Badger clan.¹⁵¹ Names were usually clan-owned and given by the father's clan.¹⁵² The latter applies to Laguna; at Acoma the child may be named by a medicine-man or any relative.¹⁵³ Laguna, being made up to a great extent of alien Pueblo clans, shows in its records the interesting fact that at no time did any one of the clans migrate *en masse* to the site, but tended to come by families.¹⁵⁴

The Eastern Keresan Pueblos, as has been noted,¹⁵⁵ seem to have attached little importance to the clan as a social group. In 1889, there were only six active clans at Sia, only two of which had more than one or two members, while a list of fifteen extinct clans was obtained.¹⁵⁶ It was regarded as wrong to marry into the clan of either the father or the mother.¹⁵⁶ At Santa Ana the Dove, Mouse, Coyote, Lizard, and Bear clans belong to one moiety; the Turkey, White Shell, Eagle, Corn, Water Turquoise, Parrot, and Fire clans to the other. The Ant clan is regarded as belonging to either moiety.¹⁵⁷ The northeastern Keresan pueblos are said to be patrilineal in descent,¹⁵⁸ and at Cochiti residence is commonly patrilocal.¹⁵⁹

The clans of the eastern Tewa seem likewise to have largely lost such importance as they may once have possessed. According to Parsons there are three or four clans in each town, but these are mere names, without even the function of regulating marriages.¹⁶⁰ According to Harrington¹⁶¹ and Freire-Marreco¹⁶² clans

¹⁵¹ Parsons, 1923, p. 219.

¹⁵² Ibid. p. 180.

¹⁵³ Parsons, 1918, p. 175.

¹⁵⁴ Parsons, 1923, p. 142.

¹⁵⁵ Pres. paper.

¹⁵⁶ Stevenson, 1889, p. 19.

¹⁵⁷ Parsons, 1920b, p. 64.

¹⁵⁸ Parsons, 1923, p. 81.

¹⁵⁹ Dumarest, 1919, p. 148.

¹⁶⁰ Parsons, 1924, p. 334.

¹⁶¹ 1912, p. 475.

¹⁶² 1914, p. 270.

among the Tewa are patrilineal in descent. The latter states that the bilateral family has become the primary unit in society, and the kinship system is used inconsistently, descriptive compound terms being introduced to remedy the confusion.¹⁶² The Tewa do not use kinship terms as clan terms because they do not regard people bearing the same clan name as necessarily related.¹⁶² While there is considerable restriction of marriage, it is not to avoid matings of clan mates, but to prevent those between either matrilineal or patrilineal kin.¹⁶³ The moieties, it should be noted, are likewise patrilineal.¹⁶⁴ How far this patrilineal, almost clanless, condition is due to alien influence, and how much to native pattern, remains to be determined.

Among the Tigua there seem to be marked differences, for in the southwestern group at Isleta, there are eight clans, which do not seem to be aligned in the moiety classification.¹⁶⁵ There are clan-heads and clan-fetishes employed in the ceremonies,¹⁶⁶ but the nature of post-marital residence, exogamy, and descent does not seem very clear. At Taos, the most northeasterly of all the pueblos, on the other hand, there are no clans at present,¹⁶⁷ although several Taos clans were formerly recorded by Bandelier.¹⁶⁸ A comparison of early and late clan lists from the Rio Grande pueblos shows a constantly decreasing number of clan names, but here again the question whether this is due to aboriginal conditions or to long continued Caucasian interference remains to be answered.

THE GROUP-HOUSE, GROUP-FETISH AND GROUP-PRIEST COMPLEX

The great importance of the house, fetish, and priest, in Pueblo society has been emphasized by many workers in the field, but the first clear statement of the combination of house and fetish as a definite complex seems to have been made by Parsons.¹⁶⁹ The new data on social organization in southern California, in

¹⁶³ Parsons, 1924, p. 334.

¹⁶⁴ Ibid. pp. 337-338.

¹⁶⁵ Parsons, 1920b, pp. 56-57.

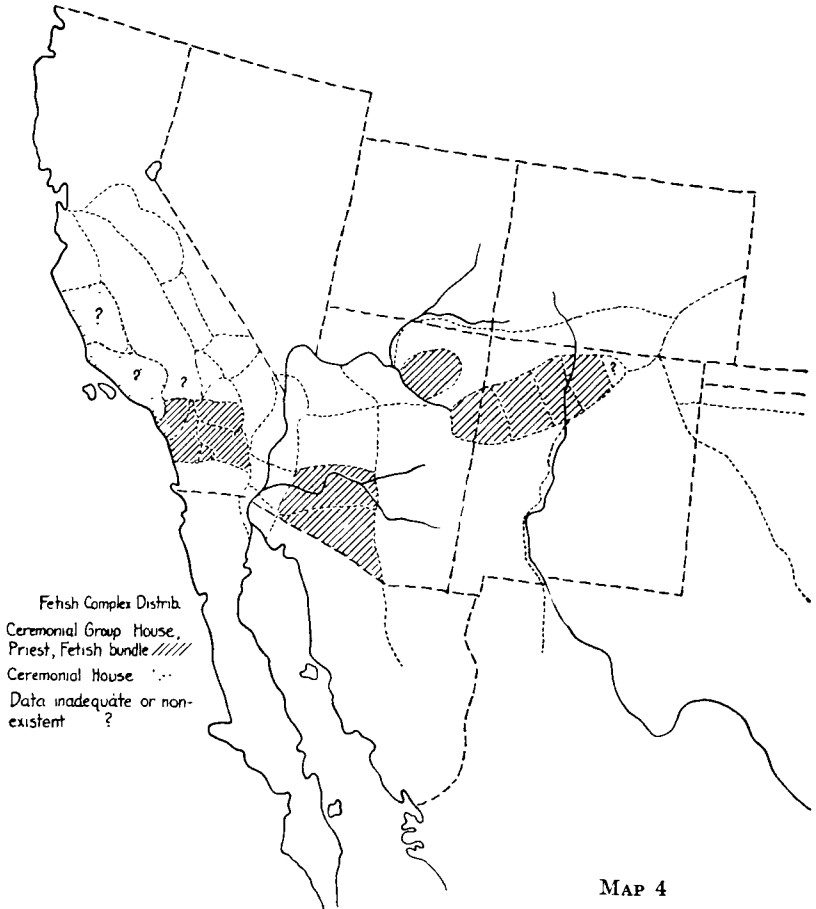
¹⁶⁶ Ibid. pp. 60-61.

¹⁶⁷ Parsons, 1923, p. 334.

¹⁶⁸ See Hodge, 1896, pp. 350-352.

¹⁶⁹ 1923, p. 228.

connection with a survey of the literature on the remainder of the southwestern area, shows that the group-house, group-fetish, and group-priest are so often associated that they also form an actual complex, rather than a mere accidental association of three different traits. A survey of the area in question, shows this complex to have been present in the social systems of many of the groups.



MAP 4

Whether the Chumash of the southern California coast or the Salinans, their northern neighbors, had this complex in their social organization is not positively known. The Chumash had a large ceremonial chamber, apparently dirt-roofed, with steps

leading up to the top, and entrance from the roof which was effected by means of a ladder.¹⁷⁰ The town chief evidently enjoyed unusual influence and honor, and if we may judge by the southern neighbors of the Chumash, played more the part of a priest than of an actual ruler or leader. He summoned neighboring groups to ceremonies and received food and shell money from the people.¹⁷⁰ While such fragmentary evidences are interesting, they would alone have small bearing on the present problem were it not for the definite occurrence of the complex among all the peoples bordering them on the southeast; peoples, moreover, who seem to have been influenced to a considerable extent by the Chumash.

To the northeast of the Chumash the complete complex does not seem to have penetrated, at least so far as the existing data are concerned. More intensive work, however, may show that the Yokuts and Miwok had traces of the triple institution.

The Juaneño, San Fernandeño, and Gabrielino quite evidently possessed this complex, for while the early literature in regard to them is fragmentary, it brings out the following points. Boscana states that all the esoteric knowledge of these groups was "confined to the chiefs of their tribes, and the old men who officiate as priests", and adds that all ceremonies were conducted in an esoteric language "distinct from that in common use".¹⁷¹ According to the same authority, the first commandment of Chinigchinich, the god who brought the individual people power to bring rain, dews, acorns, etc., was to build a temple to worship him, and to offer sacrifices. This was called "Vanquech" (similar to the Luiseño wamkish), and no others than the chief and the "puplem" (shamans) were allowed to enter its sanctuary.¹⁷²

These temples erected by the command of the god Chinigchinich, . . . , were invariably erected in the centre of their towns, and contiguous to the dwelling-place of the captain, or chief.¹⁷³

They consisted of an oval enclosure made of stakes, inside of which were two other enclosures made of mats and brush. In

¹⁷⁰ Kroeber, 1919, pp. 556-557.

¹⁷¹ 1846, pp. 235-236.

¹⁷² Boscana, 1846, pp. 246-255.

¹⁷³ Ibid. pp. 259-261.

the inner one was "a kind of hurdle" on which was placed a figure of the god, Chinigchinich, which consisted of the skin of a coyote or "gato montes" (wild cat) with head and feet attached. Inside of this were placed feathers of particular bird species, talons, mountain lion's claws, deer horns, and projecting from the mouth a few arrows. Next to the figure was placed a bow and more arrows. When all the people had been called together, the shamans drew "a very ridiculous figure" on the ground before Chinigchinich, which all the people worshipped, and to which they presented offerings of "bateas" (special instruments). This inner enclosure could only be entered by the "Chief, Puplem and elders", on feast days. A profound silence was maintained, and sometimes the chief or one of the shamans danced before the altar. The ceremony closed by all present partaking of food from the same vessel.¹⁷³ While the chiefs had much ceremonial importance, were distinguished by black paint, a hair-cord wrapped around the head, a decorated bull-roarer, turtle shell rattle, and feather skirt, they had little actual power. Food was given to the chief to store for all the people, but if he squandered it he might be deposed, a new chief in the paternal line being appointed.¹⁷⁴ Nearly all the people in the village were related.¹⁷⁵ It is interesting to note that the priests who danced before the altar were painted red and black, as were the sons of chiefs when they were initiated into the ceremonial rites.¹⁷⁶ A similar picture, but with less detail, is presented by Hugo Reid.¹⁷⁷

From new material, obtained by the present author in the winter of 1924-25, it appears that the Luiseño, Cupeño, Cahuilla (three divisions) and Serrano all possessed this complex in its full form. The importance of the ceremonial leader (not), the fetish bundle (ma'swut) and ceremonial house (wamkish) among the Luiseño has already been discussed.¹⁷⁸ Among all these groups

¹⁷⁴ Boscana, 1846, pp. 263, 264.

¹⁷⁵ Ibid. p. 267.

¹⁷⁶ Ibid. pp. 248, 271.

¹⁷⁷ 1852.

¹⁷⁸ This paper.

the fetish bundle, or wrapping called *ma'swut*,¹⁷⁹ is the most important part of the fetish concept. According to theory, these matting bundles came from the western coast, where according to the Cahuilla creation story they were brought out of the ocean by Coyote.¹⁷⁹ Actually the Cupeño and Cahuilla seem to have used mountain reeds for their *ma'swut* bundles. The Serrano used either reeds or cactus fibre¹⁷⁹ for their fetish wrappings. The mats were from four to six feet in length, and about three feet wide.

Among all the groups, ceremonial objects were wrapped up in this mat which was cared for by the chief. The Cupeño wrapped up crystal-bearing wands, turtle shell rattles, eagle feathers and eagle feather skirts, eagle down headdresses, feather wands and shell money in their bundles. Those were always hung up in a dark corner of the ceremonial leader's house, which was likewise the dance house. The matting was used to make images of the dead, for burning at the mourning ceremony. Small portions of *ma'swut* were given to other ceremonial leaders in time of mourning or great stress. When the latter occurred, it was necessary for women in the leader's household to accompany the *ma'swut* and feed it acorn-meal and other food. It was considered to be alive, and baskets and other presents were made to it. The chief or priest obtained his power from this *ma'swut*, and he talked to it in the *ma'swut* language. The bundle, and the house in which it was kept, were very sacred.

The same concept held for the Cahuilla groups, *ma'swut* was known as "the heart of the house", and was passed on from one clan leader to his successor in the paternal line. It was said to be very powerful, and by talking to the *ma'swut* in its own esoteric language, the clan leader could bring misfortune to members of the clan who failed to obey his judgments. The different clans had different objects wrapped up in the bundle; on the desert

¹⁷⁹ *Ma'swut* or *misvut*, was first mentioned in a creation story of the Desert Cahuilla, obtained by Hooper, 1920, p. 326. Cactus fibre mats in which the Serrano keep their sacred feathers, are mentioned, by Benedict, 1924, p. 389. The Serrano call this mat and the sacred feathers, *mu'urtch*; the Luiseno, Cupeño and Cahuilla all use local variants of the term *ma'swut*.

one clan had a sacred stone pipe, another at Palm Springs had a whistle made of the pelvis of a California grizzly bear, certain of the Mountain Cahuilla clans had stone concretions, eagle bone whistles, and strangely shaped sticks. Always the ceremonial belongings of the group, barring purely personal or shamanistic paraphernalia, were included in the bundle. The nature of this material varied with the rites performed by the clans, the distribution of which cannot be considered here. The main fetish of the Serrano was the long string of sacred feathers.¹⁸⁰ A similar string was possessed by the southern Mountain Cahuilla.

At the week-long Mourning Ceremony of the Palm Springs Cahuilla, observed by the author in 1925, the importance of the *ma'swut* concept was well brought out, as was the importance of the priest and the ceremonial house. Three days prior to the ceremony the "net" (clan priest) "retreats" within the "*kish-amnawut*" ("big house", e.g. dance-house) and spends a considerable part of this time conferring with the *ma'swut* in the inner room. When the ceremony begins the clan shamans seek advice from the "little witch doctors" of the four directions, who through the *ma'swut* tell the priest if the time is favorable. In the middle of the week, after dark, the priest and his assistant extinguish all lights in the dance-house and the priest brings the *ma'swut* bundle into the center of the house. All present are very silent, for in the old days, it is said, the *ma'swut* killed any one who made a noise. Unfolding the fetish bundle in the dark, the priest prays over it in the "*ma'swut* language" asking it to bless the house, then all the men kneeling blow cigarette smoke over the bundle, and it is put away in the inner room until the next ceremony. Formerly the priest's assistant, called the *paha'*, blew on the bear-bone whistle at this time, a sound that would kill any noisy or irreverent person. Now, however, they say this whistle has disappeared. The *ma'swut* is "the heart of the big house", which gives the clan priest his power and sanctifies the ceremonial house. Even today, sadly broken down as the old ceremonials of the southern Californians are, it was impossible for me to examine the *ma'swut*, and only a few of the old men would

¹⁸⁰ Benedict, 1924, p. 389.

talk about it. When the last active clan of the Mountain Cahuilla gave up their ceremonial activities, the clan priest buried his ma'swut in a distant cave, and sent his ceremonial shell money to the active clan at Palm Springs. It can safely be said that the clan-priest, "big house" and ma'swut complex is the most important factor in the aboriginal society of southern California today, as it undoubtedly was in pre-Mission times.

The complex seems to have been lacking among the Yuman Diegueño, and as far as known among the Chemehuevi and other Plateau Shoshoneans. None of the Colorado River Yuman peoples¹⁸¹ had it in its full form, for while in myth and ritual the house seems to have been ceremonially important among the Yuma and Mohave,¹⁸² there were no priests or fetish bundles, and in actual ceremonies the house was little used. Somewhat the same state of affairs occurred among the Apache and the Navajo. The former have personal fetishes, especially the shamans, and use a symbolic four-pole lodge in the girls' puberty ceremony in which a priest is hired.¹⁸³ There seem to be no references to group-priests, group-houses or group-fetishes, and on the whole such resemblances to the complex as do occur seem to be rather pale imitations of Pueblo ceremonies, instead of fundamental concepts of Apache society. The Navajo also seem to reflect the Pueblo, especially the Hopi ceremonials, in their house dedications,¹⁸⁴ hunting and flock fetishes,¹⁸⁵ sun symbol in basket at the Night Chant,¹⁸⁶ ceremonial tobacco smoking,¹⁸⁷ and carved images which are talked to in a foreign language, presumably Hopi.¹⁸⁸ I would hesitate to ascribe all these features to comparatively late borrowing were it not for the statement made by Reichard, that with one exception which is not clear as yet, there is no relation

¹⁸¹ Kroeber, 1919, p. 794.

¹⁸² The up-river Havasupai have no traces of this complex, having no priest, fetish or dance house.

¹⁸³ Goddard, 1921, pp. 171-172.

¹⁸⁴ Franciscan Fathers, 1910, pp. 329-333; Stephen, 1893, p. 351.

¹⁸⁵ Goddard, 1921, p. 167; Cushing, 1880, p. 44.

¹⁸⁶ Mathews, 1887, p. 438.

¹⁸⁷ Ibid., p. 234.

¹⁸⁸ Franciscan Fathers, 1910, pp. 496-497.

between any priest, fetish, or ceremonial house and the Navajo clan organization.¹⁸⁹ The view that these Pueblo-like features possessed by the Navajo represent comparatively late borrowings has been previously stated by J. Stevenson¹⁹⁰ and the Franciscan Fathers.¹⁹¹

The previous discussion of the moiety and clan organization of the Pima and Papago has shown how obscure and contradictory are many of the data concerning their society. In spite of this confusion enough material is extant to indicate quite strongly that the Pima and Papago possessed the group-house, fetish, and priest complex in its full form. In the description given by Lumholtz,¹⁹¹ striking analogies to both Californian and Pueblo rituals appear. During the Papago Sahuaro feast, strings of eagle feathers were stretched across the dance house from east to west, while "rock crystals and queer objects" were used to procure rain.¹⁹² The group-fetish is described as a

long basket of enormous proportions placed between east and west on the ground at the foot of the western pole, near the doctors. It was of the same oblong shape as the ordinary medicine basket of so many tribes, and serves as a receptacle for the sacred paraphernalia of the lodge. Here the string of eagle feathers hanging near by is kept during the year. It is provided with a cover of the same material, considered by the Indians as its blanket, which when the basket is in use, is placed on the ground for it to "sit on".¹⁹³

During the ceremony the medicine man blew and breathed over the sacred stone (taken from the basket) "making peculiar noises". These actions were for the purpose of bringing rain.¹⁹⁴ Lumholtz was refused permission to examine the contents of the basket, for the priest said it was very dangerous, and might harm the beholder.¹⁹⁴ After the great annual harvest feast in August the sacred paraphernalia are put away in some distant cave.¹⁹⁵

The lodge is a circular dome-shaped grass hut, the ancient form of Papago habitation, and is larger than the dwelling house.

¹⁸⁹ Letter of Jan. 27, 1926.

¹⁹⁰ 1886, p. 23.

¹⁹¹ 1912. Mason, 1920, gives a similar description.

¹⁹² Lumholtz, 1912, p. 49.

¹⁹³ *Ibid.* p. 49.

¹⁹⁴ *Ibid.* pp. 53-55.

¹⁹⁵ *Ibid.* p. 173

It is called kúki, "big house".¹⁹⁶ When a dispute arose between Lumholtz and one of the local Papago, the latter stated that, "He was going to bring the matter before the Big House, . . .", and when he had done so, the priest reprimanded Lumholtz for proceeding without the permission of the "big house", saying "In this house I tell people what to do, and this is the place where any undertaking should begin."¹⁹⁷ This ceremonial leader or priest who is in charge of the lodge and its sacred objects is elected for life.

He lives near by and is called Keeper of the Smoke, which means tobacco smoke.¹⁹⁸

When this information is considered in connection with the fact of village exogamy among the Papago,¹⁹⁹ the village unit, ceremonially held together by the group-house, fetish, and priest complex, appears more fundamental than the loose non-exogamous "clan" or phratry system.

Russell mentions the council house of the Pima, which, like the other Pima houses, was built by the men.²⁰⁰ He likewise mentions that families kept owl feathers in a long rectangular box or basket of maguey leaf,²⁰¹ and that cotton-bound medicine sticks were used by the shamans in connection with other paraphernalia.²⁰² He gives little data on ceremonial organization but it seems highly probable considering their community in moiety and clan organization, as well as material culture, that the Pima and the Papago both had the group-house, fetish, and priest complex. The uniformity of the two systems has also been assumed by Goddard.²⁰³

Among the Pueblo peoples the complex under discussion enters so fully into their involved ceremonial life and appears to be of such antiquity, that only a résumé of its most salient characteristics

¹⁹⁶ Lumholtz, 1912, p. 51.

¹⁹⁷ Ibid., pp. 102-106.

¹⁹⁸ Ibid. p. 52.

¹⁹⁹ Gifford, 1916a, p. 176.

²⁰⁰ Russell, 1904, p. 153.

²⁰¹ Ibid. p. 252.

²⁰² Ibid. p. 106.

²⁰³ Goddard, 1921, p. 135.

may be given here.²⁰⁶ The kiva itself is found in association with practically all Pueblo ruins in the Southwest²⁰⁴ and is also associated with ruins of the pre-Pueblo culture.²⁰⁵ The fetishes, usually stone concretions, express their antiquity in their appearance and in their associations.²⁰⁷ The antiquity of the priest concept is harder to trace, but may be assumed from ethnological evidence. While the association of these three concepts as a complex seems to have been more or less assumed by writers on the southwest, it has, so far as I know, never been treated as such, and as a result references to it are decidedly scattered.

Among the Hopi, clans are not necessarily associated with individual kivas, but one clan is usually considered as the builder and nominal owner of the kiva.²⁰⁸ Clan names are moreover often applied to the different kivas.²⁰⁹ Later work confirms this view of clan association with individual kivas, and adds the fact that, should a clan grow too large, additional kivas may be built.²¹⁰ The four lines drawn on the wall of the Hopi dwelling during natal ceremonies, symbolizing the "house", with similar symbolic "house" rites performed in nearly all secret ceremonies,²¹¹ shows how deeply the concept of the ceremonial house enters into the consciousness of the people. The "house of the clouds" figures in certain ceremonial songs.²¹¹

Fetishes, and with them fetish bundles, are associated with every house,²¹² clan,²¹³ and fraternity²¹⁴ of the Hopi. The household fetish is a stone animal, and is the property of the woman, who feeds it daily. It is the guardian of her house.²¹² The sacred paraphernalia of the secret fraternities are supposed to have their

²⁰⁴ Cushing, 1896, p. 351., Mindeleff, V. 1891, p. 111.

²⁰⁶ Kidder, 1924, pp. 123-127.

²⁰⁶ Cushing, 1896, p. 366.

²⁰⁷ Voth, 1901, p. 86.

²⁰⁸ Voth, 1903b, p. 6.

²⁰⁹ Voth, 1905b, p. 73.

²¹⁰ Parsons, 1922, p. 296.

²¹¹ Voth, 1903a, p. 49.

²¹² Parsons, 1923, p. 177 n. 4.

²¹³ Lowie, field notes, 1916.

²¹⁴ Dorsey and Voth, 1901, pp. 44-45.

peculiar charm or influence, especially the altar paraphernalia, which cannot be touched or even seen without danger.²¹⁵ The nature of the clan fetishes has been previously indicated. It appears that the clan fetish is in the hands of one lineage in the clan, and that this is the clan unit in so-called "clan" migrations.

The custodian of a clan fetish believes that were he to migrate all his clans-people would have to follow him, and no doubt those who attached importance to the fetish would indeed follow him. Now the members of the custodian's maternal family are those who most value the fetish and who would stay by it. So that when a Hopi refers to migration of clan he is really referring to a migration by a fetish-holding maternal family, to him the heart of the clan.

The Hopi individual does not readily discuss this fetish concept, first because it is so clear to him, and second because he does not care to discuss or even refer to the fetishes.

And yet in native philosophy it is the clan fetish or the clan mask (*wöye*)—every clan has a *wöye* . . . —which holds the group together.²¹⁶

Lowie states that during the flute ceremony at Walpi, feather offerings are laid out on a Havasupai basket, which is carried to a dark section of the ceremonial chamber and placed in front of the altar.²¹⁷ Goddard mentions very antique-appearing images of the twin war gods, and stone mountain lion fetishes, which are placed by the symbolically colored (directional) sand-painting during initiation rites.²¹⁸ The use of the quartz-crystal sun symbol, in the center of the sand painting called the "house of the sun" likewise brings out the importance of both house and fetish concept. The fetishes are consecrated by breathing and blowing clouds of smoke over them from the cone-shaped pipe called "cloud producer."²¹⁹ The whole idea of ceremonial smoking on entering the kiva, to consecrate paraphernalia and to bring rain clouds, is fundamental in Hopi ritual, and without this no ceremony would be considered efficacious.²²⁰ Corn meal is sprinkled over the altar,

²¹⁵ Voth, 1903b, p. 44.

²¹⁶ Parsons, 1922, p. 289.

²¹⁷ Field notes, 1916.

²¹⁸ Goddard, 1921, p. 113; also Dorsey and Voth, 1901, p. 22.

²¹⁹ Voth, 1901, p. 87, 1903b, p. 15.

²²⁰ Voth, 1903b, p. 11.

fetishes, and in the flute ceremony over the ceremonial basket containing offerings.²²¹ The blowing of eagle-bone whistles, into the medicine bowl²²² during all extended Hopi ceremonials is important.²²³ Prayers are offered by the priest before the altar and fetishes.²²⁴ The intimate relationship of the priest to the fetish and to the kiva is well known in a general way, but the exact relationship is decidedly involved. Such facts as are clear have been brought out previously in the discussion of Pueblo clans.

According to Cushing the Zuñi fetishes are designated as "What they live by", and are relics of the gods given directly to mankind.²²⁵ The myths relating to these fetishes which are usually natural concretions are full of archaic and esoteric terms. The images themselves are regarded as possessing the actual breath and life of the Prey God animals they represent. Thus, they are mediators between the priests who hold them "in captivity" and the gods. On the day of the "Council of the Fetishes" the priests pray over the fetishes and the other members respond.²²⁶ Each rain priest possesses one of these most sacred fetishes, which according to legend were "brought into the world wrapped in a mat of straw in a crude basket."²²⁷ When the mythical Zuñi ancestors were divided into clans each became associated with such a fetish, which though at present used by successive rain priests, must remain in the possession of the women of the clan, passing from mother to daughter or sister to sister.²²⁸ These fetishes are often simple reeds or bundles of reeds.²²⁹ From the fetish the priest, after a short prayer and meal sprinkling, draws "the sacred breath."²²⁹ The ceremonial importance of tobacco smoke as the offering that brings rain clouds appears as great among the Zuñi²³⁰ as among the Hopi. Corn meal sprinklings, plume offer-

²²¹ Lowie, field notes, 1916.

²²² Voth, 1901, pp. 78, 88.

²²³ Voth, 1903b, p. 12 (see pl. VI).

²²⁴ See Parsons, 1923, p. 216 n. 2.

²²⁵ *Ibid.*,

²²⁶ Cushing, 1880, pp. 12-32.

²²⁷ Stevenson, 1904, p. 26.

²²⁸ *Ibid.* p. 164.

²²⁹ *Ibid.* p. 125.

²³⁰ *Ibid.* p. 21.

ings and other rites are performed for the altars and fetishes, as among the Hopi. A new expansion of the clan may lead to the manufacture of a new fetish, and in case of a threatened extinction of the clan the keepers of the fetish may bury or definitely dispose of it.²³¹ The room into which the priests "retreat" prior to ceremonies is usually directly above the chamber of the fetish, and meal is sprinkled through an opening onto the fetish. At other times this opening is sealed up.²³² This period of retirement prior to a ceremony is characteristic of the priesthood in all the pueblos. The guardianship of the fetish is a strictly clan affair, the house where it is kept determining its clan proprietorship.²³³ It is worth noting that the fetish of the Shu'maakwe fraternity at Zuñi, "is distinctly different from the others." The songs connected with this fetish are in the Pima Language.²³⁴ All students of Zuñi bring out the importance of the fetish concept in definitely shaping the social organization. In this regard, Kroeber says in part:

I believe that the truest understanding of Zuñi life other than its purely practical manifestations, can be had by setting the *ettowe* (fetishes) as a center. Around these priesthoods, fraternities, clan organization, as well as most esoteric thinking and sacred tradition group themselves, while in turn kivas, dances, and acts of public worship can be construed as but the outward means of expression of the inner activities that radiate around the nucleus of the physical fetishes and the ideas attached to them. In other words he who knows all that is knowable concerning the (fetishes), must necessarily understand substantially the whole of Zuñi society.²³⁵

The central and eastern pueblos conform in all essentials to the complex concept just outlined, a few details, however, may be recorded. The most sacred fetish of the western Keresans is a corn ear; it is encircled with abalone shell and olivella beads, and wrapped in unspun cotton. Fetish stones are used on the altars, and are wrapped in corn meal and corn husks at other times.²³⁶ Corn meal offered the fetishes is first breathed upon.²³⁷ Certain

²³¹ Kroeber, 1919, p. 174.

²³² Stevenson, 1904, p. 179.

²³³ Parsons, 1917, p. 252.

²³⁴ Stevenson, 1904, p. 166.

²³⁵ Kroeber, 1919, pp. 174-175.

²³⁶ Parsons, 1923, pp. 95, 118.

²³⁷ *Ibid.* pp. 125, 126.

masks are associated with certain clans, and when no one is qualified to inherit such a mask, it is buried in the river.²³⁸ The clan heads go into retreat for four days and make images of the sun. Each has a basket with arrow points attached, which contains fully kernelled ears of corn of which fetishes are made. They likewise keep stone fetish animals, and terraced medicine bowls. Knowledge of the rituals in the basis of leadership and this also applies to the rain priests at Zuñi.²³⁹

Among the eastern Keresans at Cochiti and Sia, details of organization are obscure, but it seems clear that ceremonial priests, fetishes and kivas are of paramount importance. At Cochiti, the Cacique is called the father and mother of his people, he prays for the whole world and is a man of peace. His office is characterized by the possession of a small black staff with eagle feathers attached, and a small jar of unknown content. He gives advice, and counsels harmony; and at certain periods communal hunts are organized by the war captain to secure food for him.²⁴⁰ The relation of the Cacique to the clans or clan leaders is not known. At Sia there is one chief rain priest appointed for life from one of the three clans, he also is supposed to be absorbed with religion, and is never supposed to leave the village.²⁴¹ There is a stone in the village laid by the priest, emblematic of the heart of the village "(for a heart must be, before a thing can exist)".²⁴² Stone animal fetishes are employed, a line of meal laid before them, allowing the spirits of the animals they represent to enter during the ceremonies. The priest doctors of the warrior society possess slat altars, and those who practise through the power of the prey animals have sand paintings as well. The fetishes are carefully stored in different houses between the ceremonies. During the ceremonies the priests blow smoke from ceremonial cigarettes over the altar and fetishes, and draw the "sacred breath" from the latter. When water is poured into the sacred

²³⁸ Parsons, 1923, pp. 221-222.

²³⁹ *Ibid.*, p. 214.

²⁴⁰ Dumarest, 1919, pp. 197-199.

²⁴¹ Stevenson, 1889, p. 16.

²⁴² *Ibid.* p. 67.

"cloud bowl", whistles are blown. Offerings are made to the fetishes.²⁴³

Among the eastern Tewa the clans appear to be functionless, the priesthood, kivas, and I presume certain fetishes, being associated with the moieties. The southern Tigua are likewise dominated by the double-kiva, moiety idea. There are clans, however, and clan heads who go into retreat before ceremonies; while fetishes are also employed.²⁴⁴ At Taos, in the north, the moiety is dominant, with two kivas and priests, but the details of organization are unknown.

This complex appears among a number of the Plains tribes,²⁴⁵ and well to the northeast; the Winnebago being an excellent example of the frequent combination of moiety, clan, and fetish-complex.²⁴⁶ A study of these organizations would be highly significant in regard to the history of the complex, but is beyond the scope of the present paper.

II INTERPRETATION OF DISTRIBUTION

So far we have merely mapped out the distribution of social groupings in the area under consideration, (see p. 55) and it now remains to compare these and draw whatever conclusions seem permissible from the data at hand.

A true tribal sense seems to characterize, and in certain respects set aside, the Yuman tribes of the lower Colorado River. Similarly the Pima and Papago, their neighbors and intermittent enemies, seem to have acted together when the need arose. The Navajo, in theory or legend, had twelve chiefs that met in council, but in actuality they seem to have acted in independent bands, as did the Apache. The people of the Plains were organized in strong warlike tribes, but in the present survey we have not considered them in more than a general way. For the rest of the area, localized clans or lineages, and bands appear to have been the political units.

²⁴³ Stevenson, 1889 p. 72-85.

²⁴⁴ Parsons 1920, b, pp. 60-61.

²⁴⁵ Murie, 1914, pp. 641-642.

²⁴⁶ Lowie, 1920, pp. 118-119.

The distribution of the moiety over the southwest presents an intricate problem.²⁴⁷ In the light of new information it seems practically certain that in southern and south central California the various moiety groupings arose from one source. The names given the divisions differ in various parts of the area, but the ideas of exogamy, reciprocity, paternal descent, divisions of natural phenomena (especially animals) and distinguishing moiety paints are nearly always present wherever the moiety occurs. Thus we have the bear and deer divisions of the Salinans, the land and water divisions of the Miwok (also associated strongly with bear and deer in moiety names),²⁴⁸ upstream and downstream of the Yokuts and Mono, and the coyote and wildcat of the Cupeño, Cahuilla and Serrano. The latter names for the two divisions probably arose among the Cupeño by the association of Shoshonean and Yuman people at Warner's Hot Springs, the clans of the former being called coyote, and the latter wildcat. The former animal is important in Shoshonean, and the latter in Yuman mythology;²⁴⁹ and it seems probable that the animal name most commonly associated with each group was given to the moiety grouping common to southern California.

Among the Miwok, spotted face designs indicated the water moiety, stripes the land moiety; while among the Cupeño, spotted face designs indicated the wildcat, stripes the coyote moiety. Whenever moiety paints were remembered they fitted this pattern. In addition to the Saboba dual division and the moiety myth of the Luiseño, I am inclined to believe that the body paint of the ceremonial assistant or paha, half red and half black, supposedly symbolizing the male and female red racer (*Coluber flagellum*) was due to early moiety influence. This name was employed by Luiseño and Cahuilla. According to Boscana, Gabrielino priests were also painted red and black.²⁵⁰

²⁴⁷ Boas, 1924, p. 342.

²⁴⁸ Kroeber, 1925, p. 454.

²⁴⁹ The Diegueño attach a color symbolism to the wild cat. Gifford, 1918, p. 169. Among the Mountain Cahuilla of Los Coyotes Canyon a somewhat similar symbolism is attached to the coyote.

²⁵⁰ 1846, p. 254.

The apparent breaks in the distribution of the moiety in southern California are more impressive on the map than actually significant. (Map 2.) The central groups without any moiety organization are the Kawaiisu and Tübatulabal.²⁵¹ The latter are of the Kern River Shoshonean branch, and while their residence in the area may have been as long as that of the Southern California Shoshonean branch, they are a small isolated group, probably more in touch with the Plateau culture than that to the west. The Kawaiisu are Plateau Shoshoneans and appear to be comparatively late comers to the area.²⁵² The Plateau Shoshoneans such as the Chemehuevi, and the Yuman tribes of the Colorado River, are without the institution, and form a barrier between the moiety-organized peoples of the west and east. Thus it seems clear that the two main factors in obscuring the moiety relationship in southern California appear to be intrusions from the north and east of non-dichotomous groups, and a fading of the institution in areas where it was longest in vogue. Added to this we have practically no data in regard to the moiety for the Chumash, Gabrielino, or Juaneño, who may well have been at the center of its western dispersal. The fact that the moiety idea had practically disappeared among the Luiseño may indicate that the same condition occurred among their western neighbors.

The nearest people to the east having a moiety division are the Pima and Papago of the allied Uto-Aztekan linguistic stock. It appears there as an outworn custom having no function in their present day society. However the appearance of characteristic face paints for each moiety, as well as a division of all animals between them, is similar to the moiety in California. The two colors symbolizing the moieties are red and white. Descent of the moiety is patrilinear but there is at present no moiety exogamy.

The Apache and Navajo have no traces of any dual division, but the western Pueblos have traces in both myth and ceremony. At Zuñi, red and black paints are associated with prayer sticks for summer rains and winter rains, respectively. There are other ceremonial manifestations of the moiety among both the Hopi

²⁵¹ Gifford, 1918, p. 216.

²⁵² Kroeber, 1925, p. 578.

and Zuñi. Among the eastern Pueblos the ceremonial importance of patrilineal, non-exogamous moiety is clear. The association of red and black paints with the two moieties at Isleta has also been noted. Whether the rather obscure custom of assigning animal-named clans to different moieties among the eastern Pueblos can be compared to the California custom of dividing the various animals between the moieties is uncertain but appears quite possible.

For the area under consideration it would seem that the patrilineal moiety is most strongly represented on the periphery, while in the central area characterized by the Pima, Papago and western Pueblos, it has faded to little more than a myth. Among the Athapaskan, Yuman, and Basin Shoshonean peoples, who appear as somewhat late invaders in the area, the moiety is not found at all.

That the Pueblo dichotomous organization is related to that of such Plains tribes as the Pawnee seems probable when we also take into account the bundle-fetish and priest complex of the latter people.²⁵³ But the nature of this relationship, as well as that of the other dichotomous Plains and eastern tribes,²⁵⁴ is beyond the scope of the present paper.

To presume an earlier connection between all these southwestern groups possessing a moiety organization would be extremely rash were it not for strong corroborating evidence. All the Southern California Shoshoneans and all the Pueblo peoples having a dichotomous organization of varying degree of importance also possess exogamous clans characterized by the clan-house, priest and fetish complex. Probably this holds for the Uto-Aztekan Pima and Papago as well, but the clans on record for the latter seem to be loose non-exogamous reflections of the Mohave type, and really appear more like phratries than clans. They are not localized and are not centered around any clan house, priest, or fetish, whereas the villages of the Pima and Papago are exogamous, and possess the complete house, priest and fetish complex. This village unit

²⁵³ Murie, 1914, pp. 549-643. It is well to note that the Pawnee moiety is matrilineal.

²⁵⁴ Radin, 1915, pp. 1-8; Wissler, 1917, p. 158.

therefore appears quite similar to the south Californian localized clan, characterized by the fetish-complex, also common to the Pueblo clan.

The localized exogamous matrilineal clans and phratries (or clan groups) of the Apache and Navajo seem to be reflections of the strong matrilineal clans of the western Pueblos, but they lack entirely the clan-house, priest and fetish complex that is so vital to the latter. Similarly the Yuman peoples of the lower Colorado River in their exogamous non-localized patrilineal clans, whose names are borne by the women, may represent the influence of the developed matrilineal clan of the western Pueblos on a patrilineal group. However this unique system arose, I believe that it has spread in a somewhat variant form back to the Pima and Papago, in part covering over their older and more Pueblo-like organization. This may only be proved or disproved by more data from the people in question. In the same way I am inclined to account for the otherwise anomalous phratries of the Western Mono, although this is more hypothetical. The occurrence of the Pima and Papago clans, whose vaguely totemic names apply to the father, to the east of the Yuma and Mohave; and of the Mono, whose phratries are named after the totem animal of the father, to the west of the same people, can best be explained through the diffusion of this indirect clan-naming system from the Colorado River center. The "posha" of the Yokuts appears as the most westerly occurrence of this indirectly totemic clan. It is in accord with observed facts in southern California, that while the Yuma and Mohave have influenced their western neighbors in a considerable degree, these influences are underlaid by more widespread and basic concepts found among the Pueblo peoples. The natural inference to be drawn from such a situation being, that the Pueblo-like influences (or similarities) are the older, and in the regions nearest the Colorado River have been overlaid by Yuman concepts. Thus, the Western Mono with their lineages, phratries and non-exogamous moiety organization, represent a combination of the two sets of cultural influences. When more is known of both Mono divisions and of their neighbors, the situation should clarify itself.

The up-river Yuman tribes, represented in this survey by the Havasupai, like the Basin Shoshoneans have the bilateral family as the unit within the tribe. Thus, they have neither lineages nor clans, as have the Diegueño and lower-river Yumans, respectively.

To sum up the situation, it may be said that the Pueblos, the southern California Shoshoneans, and probably the Uto-Aztekan Pima and Papago have in addition to the moiety, male or female lineages fused into paternal or maternal clans, characterized in either case by the complete clan-house, priest and fetish complex. The Athapascan Navajo and Apache had maternal clans, probably composed of fused lineages, but without the aforementioned complex. The down-river Yumans had paternal clans or phratries, without the complex; and the up-river Yumans as well as the Basin Shoshoneans, had neither clans nor lineages, having the natural or bilateral family as the unit of society.

Gifford has shown that for most of California the lineage is the aboriginal political unit,²⁵⁵ and I am inclined to believe this applies to the Pueblo area and to the Pima and Papago. Certainly the data secured by Lowie and Parsons in regard to the Hopi, point in that direction.²⁵⁶ The latter has also shown that the patrilineal moiety of the eastern pueblos is correlated with male house-owning, while the strong matrilineal clans of the western pueblos are correlated with female house-owning.²⁵⁷ The heart of the clan organization being the fetish, and the lineage which possesses it,²⁵⁸ it would seem that in these two fundamental concepts, house-owning and fetish custodianship, we may have the cause for male or female lineage differentiation. If the woman owns the house and is custodian of the fetish, as occurs among the Hopi and at Zuñi, it seems logical that maternal reckoning of descent might follow. Matrilineal residence would strengthen this tendency, whereas male custodianship of the fetish with patrilocal residence might lead to a paternal clan system as in southern California. Spier has shown that with the bilateral

²⁵⁵ 1926.

²⁵⁶ Parsons, 1922, p. 284; Lowie, Field Notes, 1916.

²⁵⁷ Parsons, 1924, p. 338.

²⁵⁸ Parsons, 1922, p. 289.

family of the Havasupai, any factor which tended to accentuate either male or female lineage might bring about a unilateral system of descent and a sib organization.²⁵⁹ The fetish concept, with its correlates, would surely seem to be such a factor.

When the importance of the fetish-complex is fully realized, and the lineage basis of the clan borne in mind, it becomes clear why the transmission of such an important factor as the fetish-complex might lead to either paternal or maternal reckoning of descent in accord with the existing pattern of the receptors. Thus it is possible to regard the predominantly maternal clan system of the western pueblos as more or less identical with the paternal clan system of southern California, for in their fundamental fetish concept they agree even in minutiae. It is likewise significant that the moiety, wherever found in the entire area, is paternal in descent; for as this institution is more widespread than any single type of clan organization, it may indicate a former condition of paternal reckoning of descent, which owing to special conditions was superseded in the western pueblos by maternal reckoning. Whether the absence of maternal clans in the eastern pueblos is significant in this regard, depends on how far their present condition is the result of Caucasian influence or due to native pattern.

Probably the Navajo and western Apache owe their maternal clans to the influence of the fully developed maternal clan among the Hopi and at Zuñi. How far the lineage enters into their clan organization is not clear, but the very important clan fetish-complex seems to be entirely absent.

A multiple origin for the clan seems certain from a consideration of southwestern social groupings, and if the foregoing conclusions are accepted, the importance of the fetish-complex in clan formation is demonstrated. That it is only one factor is amply illustrated by those groups which do not possess the complex, and yet have clans. The relative antiquity of clan and moiety is not clear, even though the wider spread of the latter appears certain. That the correlation of a dichotomous organization with

²⁵⁹ Spier, 1922.

clans possessing the fetish-complex is significant, seems indubitable, but in south central California dichotomy seems to have spread beyond the range of the fetish-complex. It may be that a moiety idea is more volatile and easily fitted into a culture pattern than the fetish-complex, but this again must wait further comparisons in areas where the moiety and the fetish-complex both occur. A survey of southwestern social groupings certainly suggests such a correlation.

III CONCLUSIONS

The Pueblo-like features in the aboriginal society of southern California are found in greatest numbers among the coastal peoples. Such traits as the group-house, priest and fetish complex, the ceremonial ground-painting, asperging of water brought from a particular spring,²⁶⁰ placing of plume offerings in certain shrines,²⁶¹ ceremonial smoking of tobacco, offering prayers for rain, initiation of boys, ceremonial pole climbing, eagle and whirling dances, clan ownership of eagles and personification of the gods²⁶² are found in their most complete form among the Gabrielino, Juaneño, San Fernandeño and Luiseño, and in lesser degree among the Cupeño, Serrano, Mountain and Pass Cahuilla, while among the Desert Cahuilla, well to the east, only a minimal number of such practices occur. From this distribution it seems probable that the connection between the Southwest proper and southern California, was severed before the Plateau and more easterly Southern California Shoshoneans occupied their present habitat. Since the Yuman peoples of the Colorado River show comparatively few similarities to the Pueblos, it seems probable that their incursion into their present range, as well as the south westward movement of the Shoshoneans, presumably from the Great Basin,²⁶³ severed whatever connections formerly existed between the southern coast of California and the early Pueblo culture.²⁶³ Quite probably the Chumash, as well as the earliest

²⁶⁰ Boscana, 1846, pp. 293-295.

²⁶¹ Kroeber, 1908, p. 16.

²⁶² Kroeber, 1925, p. 574.

²⁶³ The Plateau Shoshoneans show more relationship to northern than to southern California, see Lowie, 1923, p. 147.

Southern California Shoshoneans to reach the Pacific, shared this common heritage of Pueblo-like traits, and from them they were diffused to the east, throughout central and even into northern California west of the Sierras.

Since no absolute records are extant to show that the Shoshoneans, Yumans, and Athapascans caused these breaks by pressing into the intervening areas, it might well be argued that no such migration had occurred, and that the traits in question were diffused through the medium of the above peoples. Opposed to this is the fact that the moiety, group-house, priest and fetish-complex, as well as rain-producing ceremonies are fundamental in Pueblo, Pima, Papago and the coastal cultures of southern California, and tend to condition all other social activities; while in the three intervening linguistic groups they are almost entirely lacking. That once possessing these Pueblo-like traits, the Athapascans, Yumans and easterly Shoshoneans might have lost them, is equally improbable, for there are only superficial traces of such traits among any of them, and their group organization is markedly different. The hypothesis that they were merely passive agents in the transmission of such an elaborate complex, and were unaffected by it themselves, is untenable when the many superficial features of Pueblo ceremonials now used by Navajo and Apache are considered. In the final analysis it would seem that there had been an intrusion of these peoples at a time when the Pueblo, probably the Uto-Aztekan, and the California coastal peoples had already developed their fundamental social structures under very similar influences.

Not only ethnology but archaeology also, indicates a very wide range for the early Pueblo culture, which was gradually cut down by the incursion of nomadic peoples.²⁶⁴ This early Pueblo culture is characterized in its archaeological remains by small ruins associated with the round kiva, and marked by black-on-white pottery.²⁶⁵ The later ruins increase in size as the range of the culture decreases, presumably due to concentration against

²⁶⁴ Kidder, 1924, pp. 43, 126.

²⁶⁵ Ibid. p. 124.

invaders.²⁶⁶ Thus, in the modern Pueblo towns, we seem to have concentrated a culture that at an earlier time extended from Great Salt Lake in the north, to southwestern Nevada in the west.²⁶⁷

In these small house and kiva ruins, it is tempting to see the stage of localized lineages in Pueblo development, similar to those localized lineages in southern California, and perhaps the towns of the Pima and Papago. If the clans of the modern Pueblo towns are made up of separate lineages, as seems probable in the light of recent ethnologic investigation, it appears possible that the clans grew from the lineages due to concentration in larger towns. Such concentration would presumably lead to the present ceremonial elaboration, as well as advance of material culture noted in the Pueblos of historic times. Barring differences in materials of construction, there is a marked analogy between these small ruins of the early Pueblo period and the localized clans of southern California, as well as with the village unit of the Pima and Papago, especially when one considers the fundamental importance of the ceremonial house in each case and the present-day similarities in moiety, group-priest and fetish-complex. Just as the Pueblo towns were formed later, probably after the Athapascan, Yuman, and Shoshonean peoples had severed the wider connections to the west; so in California among the Chumash and Gabrielino larger towns arose, evidently based on a fusion of independent lineages, and unique developments arose in each area. (Chart No. 2.)

Unfortunately such a simple view of direct transmission of basic social organization from east to west cannot be taken on the basis of archaeological evidence, for the black-on-white pottery of the early Pueblo ruins is not characteristic of ruins in Pima territory,²⁶⁸ and is utterly unknown for any period in California. What seems more probable is that prior to the main incursion of nomadic peoples, perhaps at the time of the widest early Pueblo expansion, there was a spread of basic ideas, presumably from the south;²⁶⁹ which alike influenced the development

²⁶⁶ Kidder, 1924, pp. 126, 127.

²⁶⁷ Ibid. p. 37, fig. 8.

²⁶⁸ Ibid. p. 124.

²⁶⁹ Goddard, 1920, p. 247.

CHART 1
Distribution of Social Factors

	Salinan	Miwok	Vokuts	Chumash	Gabrielino	Luiseno	Diegueno	Cupeno	Cahuilla	Serrano	Chemehuevi	Basin Shosh.	Mohave	Yuma	Havasupai	Pima	Papago	W. Apache	Navajo	Hopi	Zuni	W. Keresan	E. Keresan	Tewa	Isleta	Taos	E. Apache	Kiowa	Pawnee
Tribes W. to E.																													
Social Factors																													
Warlike Tribe	x	x	x	?	?	?	?	?	x	x			x	x	x	x	x				?	x	x	x	x	x	x	x	x
Moiety								x	x	x																			
Group-fetish	?			?	x	x	?	x	x	x																			
Group-priest	?			?	x	x	?	x	x	x																			
Group-house	x	x	x	x	x	x	x	x	x	x			?	?															
Non localized clan	?			?	?	?			x	x			x	x															
Localized clan	?			?	?	?		x	x	x			x	x															
Localized lineage	?	x	x	?	?	?	x																						
Moiety descent	?	P	P	?	?	?	?	P	P	P			P	P		P	P			?	PM	P	P	P	P	P			M
Clan Descent	?			?	?	?		P	P	P			P	P		P	P				M	MP	P	P					
Lineage Descent	?	P	P	?	?	?							P	P		P	P												
Moiety Exogamy	?	x	x	?	?	?		x	x	x																			
Clan Exogamy	?			?	?	?	x	x	x	x			x	x															

Explanation: x = present; blank = absent; ? = data not clear or lacking.

of the peoples of the south California coast, the Lower Gila and the early Pueblos to the north. This state of affairs I have attempted to bring out diagrammatically in Chart 2 indicating the early relationships between these groups and the later breaks in continuity due to the pushing in of later peoples with subsequent shifts of cultural influence.

The data on the peoples of northern Mexico are sadly inadequate, but it is clear that among the Tarahumare,²⁷⁰ Cora,²⁷¹ Tepehuane, Huichol, and Aztec,²⁷² the group-house, priest and fetish complex is well developed. Sprinkling of water, meal, and the ceremonial smoking of tobacco likewise are ceremonially important, and there is every indication that with more knowledge of their organization the relationship between the Pueblo-like cultures of the southwestern United States and adjacent areas, would become more significant.

In regard to the relationship between California and the Southwest, future archaeology in the Salt, Lower Gila, and Colorado River regions may well yield significant facts. The pottery of southern California closely resembles certain plain red types from the Lower Gila,²⁷³ and stratigraphic work there and in southern California may indicate the connection. The fact that the findings of archaeology and ethnology are definitely converging in the solution of problems of American prehistory gives great promise for the future.

SUMMARY

From the new data it appears, that the group-house, priest and fetish complex in the aboriginal society of southern California occurs among the San Fernandeño, Gabrielino, Juaneño, Luiseño, Cupeño, Cahuilla and Serrano peoples, and is the most important single factor in shaping their social organization.

This complex is likewise fundamental, and equally important, among the Pima, Papago and Pueblo peoples, and the complex

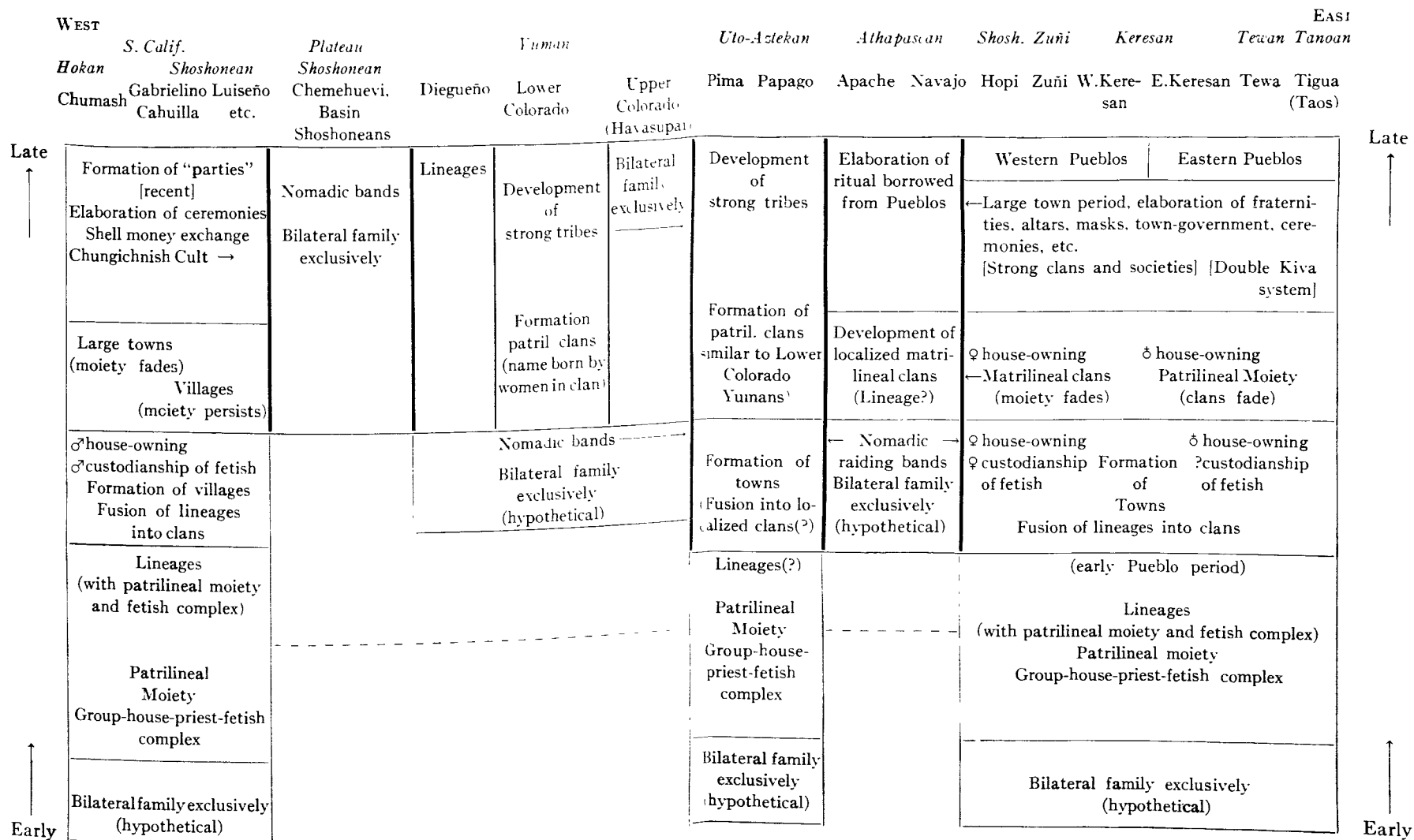
²⁷⁰ Lumholtz, 1902, pp. 171, 173, 311, 353, 365.

²⁷¹ Ibid. pp. 519-520.

²⁷² Ibid. pp. 461-464.

²⁷³ Kidder, 1924, pp. 107, 48, figs. b, c.

CHART 2
THEORETICAL RECONSTRUCTION
OF SOUTHWESTERN SOCIETY



EXPLANATION: Vertical = relative time, Horizontal = space. (west to east).
Black — = separate origin, presumably through invasion.
- - = probable early connections.
← = direction of cultural influence.

with its associated ceremonial features is so similar even to minute detail for all these groups, that an historical relationship is thereby implied.

In the area under consideration, wherever the above complex occurs, there is also present a moiety division or ceremonial traces thereof.

Wherever this dichotomy appears, its associated factors are very similar, and a common origin is therefore implied for the Californian, Pima and Papago and the Pueblo moiety.

The intervening Plateau Shoshonean, Yuman and Athapascan peoples lack the complete fetish complex and the moiety, and as they form a barrier at present between those areas possessing the two concepts, they would seem to be intruders in their present habitat who had interrupted a once continuous distribution.

Finally, the dichotomous grouping is more widely spread than any single type of clan, and in the area under consideration would appear older than any form of clan save the unilateral family or lineage.

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A NOTE ON RECENTLY DISCOVERED EVIDENCE
THROWING LIGHT ON THE POSSIBLE AGE
OF A KENTUCKY SITE

By WM. S. WEBB

IN 1895, a very thorough investigation of the prehistoric mounds and village site some ten miles southwest of Maysville, Mason County, Kentucky, known locally as Fox Field, was made for the American Museum of Natural History by Mr. Harlan I. Smith. This investigation covering a period of some three months, and resulting in the collection of a great number of artifacts, was reported in 1910.¹

Mr. Smith concludes that the material culture of this site resembles that of the Adena Mound, Baum and Gartner Sites and the Ft. Ancient and Madisonville Sites in Ohio, and assigns the Fox Field to the Fort Ancient culture as described by Mills,² although he agrees with Morehead³ that the Ft. Ancient culture at that time had not been definitely placed.

Since the excavation of the mounds in 1895, they, with the adjacent village site, have been ploughed over many times, the land being in cultivation. Graves are constantly being opened by the plough, and each year, due to the washing away of the soil, the plough reaches a few skeletons heretofore untouched. The field is so well covered with human bones even at this time as to have earned locally the appellation of "Bony Field." This field has long been of interest to local collectors of Indian artifacts and the surface has been carefully searched many times each season when the land was free from growing crops, always yielding to the industrious seeker some evidence of ancient occupation.

In the fall of 1924 the writer learned that the field was again to be ploughed, this time deeper than before, it having been in grass for several years just preceding.

¹ The Prehistoric Ethnology of a Kentucky Site. Anthropological Papers of American Museum of Natural History, Vol. VI, Part II.

² Explorations of the Baum Prehistoric Village Site, Vol. I, Part III.

³ Study of Primitive Culture in Ohio. Putnam Anniversary Volume, New York, 1909

Through the assistance of Hon. Wm. J. Curtis it was arranged to have the graves marked as the ploughing was done. Most of the graves are lined with large limestone rocks set on edge, and are covered with flat limestone rocks from two to ten square feet in area. As the plough passed over a grave at a depth of from nine to twelve inches it would often strike the rock and give out a hollow sound. About forty such positions were marked through the kindness of Mr. R. W. Carpenter who was then cultivating the land. Having the general locality of the graves marked, it became a very simple matter with a metal probe to locate the exact outline of the grave.

In April, 1925, the writer, in company with Hon. Wm. J. Curtis and Dr. W. D. Funkhouser, Head of the Department of Zoology, University of Kentucky, made an investigation of some twenty-five or more graves in Fox Field, finding the usual stone-lined graves, most of them containing multiple burials, as described by Smith. Many artifacts in shell, bone, flint and pottery of the usual forms were found.

However, in a grave containing three skeletons in a fair state of preservation, lying parallel and extended on their backs, there was found immediately under the lower jaw of one of them two teeth of the black bear, drilled so as to receive a large string of thong. From their position it was clear that the teeth had been suspended about the neck of the skeleton.

These teeth have been ground down to a flat surface on each side, showing the expenditure of very considerable effort to reshape to such a degree such very hard material.

The most interesting feature of these teeth, however, is that upon each tooth is engraved in deeply incised lines a Maltese cross, which is fairly symmetric and the same size on each tooth. These crosses are the same in length and breadth, and similarly placed on each tooth as shown by Figures 1 and 2. These teeth are the same size, and differ only in that one is a right and the other a left tooth, possibly of the same animal.

The tooth in Fig. 2 is in a somewhat better state of preservation than that in Fig. 1. In this tooth a part of the outside shell has scaled off, removing a part of the engraved cross, but fortunately

leaving quite a sufficient portion to make it certain that the aboriginal maker intended to make duplicate engravings of a Maltese cross as nearly similar in size, position, and orientation as it was possible for him to do. The fact that two teeth should have been found which possess duplicate engravings seems to preclude the possibilities that an individual Indian might have stumbled on this geometric form in a simple attempt to decorate or beautify his ornaments. The figures are so well wrought, by boldly incised lines, which stop exactly at the corners (in no place do intersecting lines pass the point of intersection) that one is forced to conclude that the original engraver had exactly in mind the figures he desired to inscribe. In fact it seems plausible that he may even have had a copy before him.

That the figures cut in this very hard material are excellent representations of the Maltese cross there can be no doubt.

This discovery naturally raised the question, when were the crosses drawn? Did the prehistoric dweller on Fox Field originate these figures? If not, where did he get his idea, his copy? Was this an individual case or could any other evidence be found that this ancient and historical geometrical form was known to the prehistoric dwellers on Fox Field?

In the private collection of the author there were several hundred objects of stone, bone, and shell which had previously come from Fox Field through the kindness of Hon. W. J. Curtis, the records of which had been very carefully kept. This material was, at the time of the discovery of the incision upon the teeth, packed in storage in the process of being moved to a new location. Only recently has it been unpacked and made available for investigation. This material was carefully searched for possible additional traces of the Maltese cross with the very interesting result that a flat shell gorget (See Fig. 3) two inches in diameter, which had been drilled with two holes for suspension was found to have on its front face a well carved Maltese cross. This gorget was taken from the breast of a skeleton found in a grave on Fox Field in the spring of 1917, which contained no other ornaments and only one implement, a beautiful flint knife some five inches long, by two and a half inches wide, finely chipped. This gorget, like any other

shell material, has become encrusted with iron oxide from the soil, which slightly obscures the engraving on it.

The cross had escaped previous attention, doubtless because it was circumscribed by a circle concentric with another circle almost twice the diameter of the first, and appears at first glance to be a part of a larger design. By comparison, however, with the



FIG. 1



FIG. 2



FIG. 3

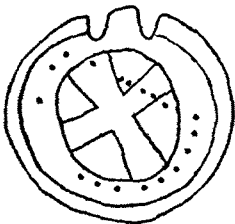


FIG. 4

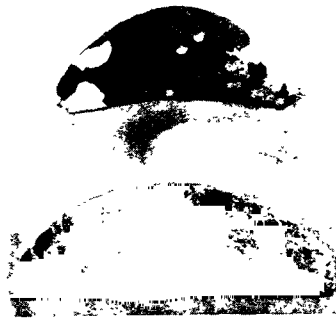


FIG. 5

designs on the bear's teeth it is quite apparent that here too there is an attempt on this shell gorget to engrave a Maltese cross, and that the remaining portion of the design is merely a decoration forming a background for the cross.

Another interesting feature may be noted that on a tooth there are some twenty-two small conical pits, evidently reamed out by

rotating a fairly sharp-pointed instrument against the tooth. Only one of the two teeth shows these pits.

It is further interesting to note that on the shell gorget these same conical pits appear to the number of nineteen. There were probably more of them, but due to the loss of part of the original surface of the gorget and the covering of oxide only nineteen pits are now identifiable. The location of these pits on tooth and gorget, relative to the crosses, is shown in Fig. 4.

What these pits may mean, is suggested later. It is interesting to find them not only on the bear's tooth that has the cross but also on the gorget having the cross. On fifteen other shell gorgets, large and small, from Fox Field and some fifty other bears' teeth from the same site there are no other crosses and no similar pits.

The very interesting problem is thus presented: Why the cross? That here is a real Maltese cross is beyond question. That these were taken from the breast and neck of skeletons found buried in Fox Field is a matter of personal knowledge to the writer. How can the presence of this historic figure be explained? The possibility that it could have originated with the primitive prehistoric men of Fox Field and been so valued by them as to have been copied by more than one individual on his ornaments and personal decorations seems barred.

It also seems highly improbable that the Indian could have gotten the design of the Maltese cross from any contact with either the early English or French explorers, by whom this symbol was not used.

It is well established that the early explorers and settlers of the Ohio River Valley in Kentucky had no knowledge of any Indian occupation at Fox Field. Such occupation had ceased so long before the first French or English explorers came to Kentucky as to leave no noticeable trace to attract any attention whatever, except the mounds explored by Mr. Smith.

It would seem, however, quite within the bounds of possibilities that contact with the early Spanish explorers in Mexico and Florida in the early part of the sixteenth century might reasonably account for the presence of the Maltese cross. The Knights of Malta, hardy soldiers and adventurers, may well have

formed a part of some Spanish party of explorers in Florida or Mexico, which could have had, with comparative ease, contact with the dwellers on Fox Field. This site is only ten miles from Maysville on the banks of the Ohio River, and it is well known that the river was the highway of travel for war parties and trade, such as existed in prehistoric days. The fact that the dwellers on Fox Field did have contact with the sea, either by trade or travel, is proven by the abundance of shell gorgets and beads made from marine shells.

If the possibility be admitted that the inhabitants of this site could have had contact with the Spaniards by going down the Ohio or Mississippi River to the Gulf, the presence of the cross on the ornament is easily explained. To a primitive people giving great veneration to signs, charms and tokens, what could have been more impressive than the Maltese cross on pennon, breast plate or sword hilt of some Knight of Malta, who in company with a Spanish party, either as friends or enemies of the Indian, may have proved invulnerable to the arrows of the Indians because of his armor. Such prowess in battle would by a primitive people be attributed to the effects of some charm or symbol as a very potent "medicine."

What more natural than that such a symbol should be adopted as his own by primitive man, and to make the influence effective, he might carve it on his necklace of bear teeth or on a shell gorget suspended over his breast.

While this explanation is highly fanciful, it does offer a plausible explanation of the occurrence of this ancient and historic symbol on the ornament and object of veneration of the prehistoric dweller of Fox Field.

It is possibly idle to speculate further as to the significance of the engravings on these ornaments. However these suggestions are ventured as seeming possibilities:

- (1) That the Indian who drew these crosses on his ornaments actually had before him a Maltese cross on some war material, as shield or armor, taken from some Spanish Knight;

- (2) That after the customs of heraldry, such shield or armor had other engravings, or "quarterings" on it as well as the Maltese cross;

(3) That the groups of conical pits and circles associated with these drawings of crosses represent the attempt of the Indian to copy the "charmed" device exactly as he saw it, to the best of his ability.

If this possibility be admitted, it would seem reasonable to suppose that burials took place in Fox Field at such a late date that it was possible for the deceased to have had contact with Spanish explorers, such as Cortez in Mexico in 1519 or De Soto in Florida and Mississippi in 1540. Possibly burials may have occurred at Fox Field as late as the last quarter of the sixteenth century.

Professor Mills² points out that inhabitants of the Gartner Village which is about seventy miles north of Fox Field had a characteristic ornament made from shells in the form of a crescent. Fig. 5. shows two small shell crescents taken from two graves on Fox Field. These specimens seem to be somewhat larger, and better preserved, than those reported by Smith¹ in 1910.

In conclusion, if this suggestion as to the age of Fox Field be accepted, it seems reasonable to attribute to the Gartner Site and to all of the Ft. Ancient culture no very great antiquity. That is, these similar and related sites may possibly have been inhabited as late as through the sixteenth century.

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THE UNIVERSITY OF MICHIGAN PHILIPPINE EXPEDITION

By CARL E. GUTHE

N EARLY a decade ago, the late Dean C. Worcester encountered fragments of Asiatic ceramics in caves and burial grounds in several localities in the Visayan group of the Philippine Islands. Largely as a result of his recommendations the University of Michigan organized an expedition to conduct "anthropological explorations in the Philippine Islands." The field work, which covered a period of three years was completed during the past summer. It seems appropriate, at this time, to give a preliminary statement of the conduct and collections of the expedition.

In view of the fact that most interest was displayed in the intrusive Asiatic ceramics, this material was made the particular subject of the work. The original intention had been to explore the entire archipelago with reference to various forms of prehistoric burial. Practical difficulties, such as transportation and location of material, made it necessary to restrict the area to include only the southern half of it, i.e., those islands lying to the south of the thirteenth parallel of latitude. This includes all of the Visayas, Mindanao, and the Sulu group.

Because of Mr. Worcester's hospitality, the headquarters of the expedition were located at the Opon mill of the Philippine Refining corporation, on the island of Mactan. This is across the channel from Cebu, one of the principal cities of the Philippines, in the very heart of the Visayan area. An entire house was given as a laboratory for the work, to which collections were brought, and where they were sorted, catalogued and packed. Mr. Worcester placed his yacht, the *Anne W. Day*, a seventy-five foot schooner with auxiliary engines, at the disposal of the expedition, thus giving it control of its own means of transportation. When conditions warranted, explorations could, thereby, be conducted in localities not ordinarily reached by the usual inter-island steamers. In the course of three years of field work twenty trips

were taken to various parts of the southern islands, which resulted in collections and information from all but three of the twenty-two provinces into which the area is divided. The method of attack was purely exploratory. Information regarding likely sites was obtained from villagers and foreigners well acquainted with the restricted area under consideration at the time. As many as possible of these localities were visited, at which notes and representative collections were obtained. No attempt was made to exhaust all the possibilities in any district, because of the brief time available. Only in a few cases, when a given site showed promise of especial value, were extended excavations undertaken.

These trips and those of several agents working in restricted districts resulted in a tremendous collection of material, totalling 4500 catalogue numbers from 542 sites, about seventy-five per cent of which constitute unbroken ceramic specimens and sherds. This material was obtained from caves, inhumations, and miscellaneous localities, including one gold mine. The last is situated in the northwestern part of the island of Masbate, in a district in which several gold mines exist today. The old mine is at present being worked by two prospectors, who are very profitably removing the refuse left by the earlier workers. Intermingled with this refuse are many sherds of blue and white porcelain and stoneware, fragments of native pottery, a few iron implements, and examples of the mortars and hand stones used for crushing ore. No traces of habitations could be found here, although it seems extremely likely that the people lived near, if not upon, the refuse heaps. At present it is uncertain whether the mine had Chinese or native workmen. It is, however, very apparent that a strong Chinese influence existed here.

Nearly every island of the Visayas contains limestone caves, and in nearly every locality a few of the caves contain burials. The people living near these caves today consider the presence of bones and broken vessels a supernatural phenomenon, and many legends have sprung up accounting for them. The floors of the caves fall roughly into four classes: smooth rock floors with very little deposit of earth; masses of broken and jagged rocks, with inaccessible crevasses; more or less deep deposits of guano; and

relatively shallow deposits of soft earth. In all of these types fragments of skeletons and sherds were encountered.

In the great majority of cases, upon entering a cave, it was immediately possible to determine by the surface evidence whether it was barren or contained burials. Several times excavations were made in apparently barren caves to ascertain if deposits existed which had been entirely covered. Such a condition was never encountered in spite of the existence of occasional rumors that vessels had been found under many feet of guano or earth. The surface evidence consisted of sherds and fragments of human bones. In every case the vessels had been broken, and in many cases so thoroughly smashed that the only conclusions possible were that it had been done intentionally by those who placed them there. In some cases the small holes in the bottoms of native vessels implied ceremonial "killing." The native pottery lends itself to this form of evidence far better than a vessel of stoneware or porcelain, which would be broken into several fragments by such treatment.

In every one of the hundred odd caves from which material was collected, there was strong proof that the mortuary material had been disturbed since it had been placed there. Sudden torrents of water rushing through the caves seemed to account for the greatest destruction of evidence. Repeatedly, masses of sherds, bones, and ornaments were found washed into a pocket, or into a depression in the floor, then partly covered with earth. Animals and native shamans added to the havoc created by the elements. Empty half shells of cocoanuts, remains of candles and palmleaf torches, and small offerings of money and ornaments gave ample evidence of the recent use of many caves. In a very few cases fragments of a vessel were found closely together. Occasionally a cache of ornaments, or the major part of a broken vessel lay in a pocket not ordinarily reached by the elements or prowlers. Several attempts were made to discover evidence of stratification, but in every case the human deposits proved to be very shallow, regardless of the depth to which the cave was filled with earth.

Under such conditions it is obvious that the skeletal material was badly scattered. In only a few instances could the bones of

one individual be separated from the rest, but in all cases the remains had been disturbed. As a rule the body appeared to have been placed upon the floor of the cave, probably wrapped in a mat which had since disintegrated. A few examples of jar burials in caves were encountered, and in several, wooden coffins were found. Coffins dating from the first years of this century were encountered in caves in Samar and the Calamianes group. Practically all of the skeletal material in the collections came from caves. Due to the conditions described above, this material consists of unrelated skulls, mandibles, long bones, and teeth. Among the ninety-five skulls in the collection are several showing frontal-occipital flattening.

From a cursory inspection of the material obtained from caves, it is at once apparent that throughout the entire southern Philippines, the natives at one time buried their dead in caves, supplying them with ornaments, weapons, and vessels, and probably with the perishable examples of material culture which have since disappeared. No traces of cave habitations as cultural traits were encountered, although several examples of present day temporary cave dwellings of herders and fishermen were seen.

The Filipinos have been under Christian influence for such a long period that all recollection of pre-Spanish inhumations has passed. They vaguely associate bones and vessels found in the course of plowing and excavating, with ancestors, but never in a personal sense. As a rule they stand in fear of the spirits of the dead, a fear which is occasionally strong enough to cause the abandonment of fertile farming land. Today no surface traces remain of these old inhumations. Most of the evidence was therefore obtained by Filipino agents travelling from village to village making inquiries. In this way they met farmers who had encountered material while plowing or digging post holes for their homes. The agents would then collect what evidence was obtainable, buying any vessels saved in the houses of the discoverers and making a surface collection from the fields when that proved possible. Usually the burials were very near the surface, and repeatedly plates and skulls had been shattered by the point of the native plow. Little accurate data regarding position of the

bones and disposition of the furniture associated with them could be obtained from the farmers, who frequently had discovered the material several years prior to the advent of the agent.

Several old burial grounds were dug by the writer. Three forms of burial are recorded: simple inhumation, at length, but never in a wooden coffin, occasionally with vessels covering various parts of the body; jar burial, in native jars; and one case of secondary burial in a small pit hollowed out of the limestone. In one burial ground, intermingled with adult burials at length, the skeletal remains of infants were found in native jars covered with stones, some of which had been grooved to receive the lip of the jar. Hearsay had it that adult burials in jars had been removed from this burial ground in the course of the construction of a road, but none were found by the writer.

The expedition collections contain nearly a thousand practically whole specimens of ceramics, and many thousands of sherds, in the form of jars, a few vases, plates, bowls, cups, and special forms. The most interesting class of this material is, of course, the Asiatic ceramics. While most of it seems to be of Chinese origin, many vessels are obviously not Chinese, and their place of origin is, as yet, unknown. It seems probable that some of them came from Southern Asia, or possibly from India or the Malay Archipelago. Due to the great complexity of Asiatic wares it is impossible to say definitely just which are represented in the collections. This will have to be determined by specialists. It may, however, be safely said that some of the specimens closely resemble wares of the Sung dynasty (960 to 1279 A. D.). Later wares, of course, are more abundant. From the conditions of the specimens it appears that most of the material is second grade, some of it practically equivalent to kiln rejects, which were brought to the islands by the Chinese traders in exchange for the products of the country. No material evidence was found of permanent Chinese colonies in the Philippines.

The examples of native wares found in caves, and occasionally with burials, offer details of great interest. All are, of course, a rather inferior grade of pottery. They differ radically in form and decoration from the present-day vessels. Some very bizarre forms

have been encountered, such as polygonal vessels with standards. The decoration is both incised and applied, the former predominating. The applied designs are formed with strips and lumps of clay arranged upon the vessel in relatively simple forms, usually marked with what appears to have been a blunt stylus. The incised decoration is often very complex. Both curvilinear and rectilinear designs occur, associated with dots and dashes. Frequently the high standards of vessels are perforated by both circular and polygonal holes. Contemporaneous native pottery, if it is decorated at all, has usually short incised lines at the base of the neck. It is hoped that a study of shapes, rims, and decoration of these older vessels will prove very illuminating with reference to the problems of migration of designs in Malaysia.

The smaller objects found associated with the burials offer great variety. The most common type of material is iron in various forms, usually weapons, occasionally implements and ornaments. Shell material is very common. In the majority of sites, shell ornaments abound, principally in the form of bracelets, although rings, pendants, and beads frequently occur, and occasionally small shell containers. Beads are very abundant, usually as rather crude examples of glass work, but also made of pottery, shell, a stone resembling agate, and various metals, including gold. Copper and copper alloys occur, usually as bracelets, and in two cases as bronze implements. Two lantakas, or bronze cannon, were excavated in the Sulu province. Stone objects are rare, although a few specimens of chipped and polished implements were found, as well as small whetstones. Gold occurs as ornaments, including ear pendants, beads, clasps, small squares which resemble buttons, and minute discs which have been set into human incisors as decoration. Lead and glass, with the exception of glass beads, occur only rarely. Lead net sinkers and a peculiar type of lead ornament in the shape of an uneven loop compose most of this class. Pottery pipes, with ornamented wings over the short stem are associated with the native ware bearing applied designs, and seem to be confined to northeastern Mindanao. Miscellaneous pottery objects, including stamps and spindle whorls also occur. Bone implements and ornaments are extremely rare, although

several specimens of antler tips, and a few implements were obtained. Wooden and textile material is practically non-existent, with the exception of native coffins. In one cave some woven fibre arm bands, belts, carrying-straps, and so forth, were obtained in very dry earth.

From the foregoing summary of the material obtained by the expedition, it is apparent that abundant opportunity exists for research along several lines. During the period of gathering the material little more than keeping the field records in order could be accomplished. The general impression gained from the geographical distribution of the material and the specimens themselves, is that early Chinese commerce, which possibly existed as early as the twelfth century, A.D., appears to have centered about a line drawn in a northeasterly direction along the western coast of Mindanao, through the central Visayas towards the southern tip of Luzon. The minor objects obtained seem to demonstrate that the earlier culture of the Visayan islands closely resembled that found today among the pagan tribes of the interiors of the larger islands. The detailed and comparative study of the material which is still to be undertaken should add not only to the knowledge of early Chinese commerce, but also to a better understanding of the earlier Filipino cultures.

A small miscellaneous collection of ethnological material was obtained although no systematic collecting was done in this field. However, the archipelago offers an extraordinary field for an ethnologist. The complexity and diversity of the various cultures of the islands is far greater than is generally supposed. Among the pagan tribes of Mindanao ample opportunity still exists for thorough study of all phases of ethnology. In the majority of cases, the people are hospitable and within easy access of the coastal towns. Although our modern culture has to some extent replaced the native material culture among the coastal Filipinos, the field for various phases of social ethnology and linguistics is still very rich. The broad ethnological situation in the Philippines is roughly similar to that in this country, in that many different culture areas exist which are more or less closely related, but, due to foreign influences, the data are gradually disappearing and will

in a few years be entirely non-existent unless trained ethnologists do field work in this area. Dr. Beyer of the University of the Philippines, has accomplished a tremendous amount in collecting material of all kinds, but the problem is too large for any one man to handle thoroughly.

THE UNIVERSITY OF MICHIGAN,
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THE STUDY OF INDIAN MUSIC IN THE NINETEENTH CENTURY

By FRANCES DENSMORE

THE first specialized study of Indian music was made by a German and published in Germany. Theodor Baker came to America in 1880 and remained among the Seneca Indians of New York during the entire summer; he also visited the Indian school at Carlisle, Pennsylvania. Returning to Germany he wrote a book of eighty-two pages on the music of the American Indians.¹ It is said that he made the research in order to obtain a doctor's degree at the University of Leipzig, but his book does not mention this use of the work. In addition to personal observations among the Iroquois he quotes the best authorities on tribes of the Plains, the Southwest and Mexico. It is to be regretted that so scholarly a work has not been translated into English, for the author makes many statements which have been proven correct by later investigators and other statements which are unique and valuable.

Baker divides the songs into seven classes: Cabalistic (including the individual songs of medicine-men), Religious (including the seasonal ceremonies), Historical, War, Mourning, Love, and Social, the last-named being partly mystical and partly religious in character. Forty-three songs are transcribed in ordinary musical notation, though the author does not claim that the Indians sang the exact tones of the "piano scale." By a system of tabulation he shows the probable keynotes of the melodies and the persistence of the fifth above the keynote. This accords with the observations of later investigators that the Indians prefer tones having simple ratios of vibration. He states that the usual compass of the male voice was two octaves, beginning on F below the bass staff, or on A, on the second space of that staff. Further, he states that the Iroquois women did not take part in the singing, that the musicians did not join in the dancing, and that the

¹ Baker, Theodor. *Über die Musik der nordamerikanischen Wilden.* Leipzig, 1882.

Iroquois had neither historical songs nor love songs, though both existed in neighboring tribes.

The following quotations indicate the trend of the book:

The Indians say that the songs connected with religious concepts were of supernatural origin and that the newer songs are only imitations of these songs.

As the Indians live close to Nature they get from Nature the feelings and thoughts which form the largest part of their poetry. These feelings are increased by their superstition.

The metrical dividing of the melodies is a consequence of the rhythmical *feeling* of the natives. This is not accidental but the result of slow development.

The author gives a spirited description of the Harvest Dance of the Iroquois which took place in a room about 30 by 50 feet in size. In the middle of the room were two long, low wooden benches for the musicians, and the warriors danced with short steps around these benches. The leader of the musicians and his principal assistant were at opposite ends of a bench, sitting astride and facing each other. Each held a rattle, the construction of which is not described. The leader struck the bench with his rattle, which was firmly grasped in both hands. His assistant did the same. At first the beats fell slowly and weakly but they gradually increased in rapidity and strength until the proper degree was reached. Then the leader called to the warriors, saying, "Will you begin?" The warriors responded as one man, and the song began to an accompaniment of single beats. The dancers shifted their weight from one foot to the other. Then the accompaniment changed to double beats, given so rapidly that they could scarcely be distinguished from single beats. The dancers lifted their feet, one after another, bringing them down with a violent stamping and gradually working themselves into a fury. The noise was increased by small rattles tied around the knees of the dancers. When the dancing became rapid these small rattles made a noise that was indescribable. The movement of the rattles was varied by what may be termed "false strokes," the leader bringing his rattle downward but not striking it against the bench. These motions alternated with the strokes upon the bench. With the repetitions of the songs he waved his rattle in the air, after the

manner of a man conducting a band. No mention is made of a drum at these dances but the author states that the gatherings often were so large that the voices of the singers could not be heard by all the people and that accordingly a stamping of the feet by the dancers "was necessary to keep the music in order." The musical instruments were also described by Baker.

The name of Miss Alice Cunningham Fletcher is forever linked with the music of the American Indian. She went among the Omaha for scientific work in 1883 and early secured the assistance of Mr. Francis La Flesche, a son of the head chief, whose cooperation continued until her death in 1922. Miss Fletcher was assistant in American Ethnology, Peabody Museum, Cambridge University, and holder of the Thaw Fellowship in that Institution. Her first contribution to the subject of Indian music was entitled *The 'Wawan' or Pipe Dance of the Omahas*² and was published in 1884. Ten songs in musical notation were presented in this paper. During the same year she published *The Elk Mystery or Festival*³ with one song, and four years later an article entitled *Glimpses of child-life among the Omaha tribe of Indians*⁴ with three melodies. Her work became more widely known through a later work which will be considered in a subsequent paragraph.

Dr. Carl Stumpf of Vienna published a pamphlet on the songs of the Bellacoola Indians⁵ in 1886, thus early presenting material on the Indians of British Columbia. In 1888, Dr. Franz Boas published twenty-three Eskimo songs with analytical notes in his work on "The Central Eskimo."⁶ These were transcribed in ordinary musical notation but, in some instances, he indicated the rhythm by accents, omitting the bars. He also published four melodies in his article "On certain songs and dances of the

² Fletcher, Alice Cunningham. The "Wawan" or Pipe Dance of the Omahas. Peabody Mus. of Am. Archaeol. and Ethnol. Ann. Rep. 1884, p. 308-333.

³ *Id.* The Elk mystery or festival, Ogllala Sioux. Peabody Mus. of Am. Archaeol. and Ethnol. Ann. Rep. 1884, p. 276-288.

⁴ *Id.* Glimpses of child-life among the Omaha tribe of Indians. Journal of American Folk-lore, 1888, p. 115-123.

⁵ Stumpf, Carl. Lieder der Bellakulla Indianer. Vierfelj. f. Musikwiss., 1886.

⁶ Boas, Franz. The Central Eskimo, in 6th Rep. Bur. Amer. Ethn. 1888.

Kwakiutl of British Columbia''⁷ in the same year. Dr. Boas, throughout his writings, has stressed the importance of rhythm in primitive music.

In July 1889, Dr. Jesse Walter Fewkes assumed direction of the Hemenway Southwestern Expedition which had for its object the collection of data regarding the Pueblo Indians. Mrs. Mary Hemenway of Boston was the founder of this Expedition. The following winter Mrs. Hemenway commissioned Dr. Fewkes to visit the Passamaquoddy Indians in Maine, taking with him a phonograph in order to test its practicability for recording the folk-lore of Pueblo tribes. The results were so satisfactory that a phonograph was included in the outfit of the next expedition to Zuñi. Dr. Fewkes wrote an article describing this use of the phonograph⁸ and, at the time, could find no printed mention of the recording of Indian songs by means of the phonograph. On his next visit to the Zuñi he made a number of records of their language and of their singing. The study of these cylinder records was entrusted by Mrs. Hemenway to Dr. Benjamin Ives Gilman, who at that time was lecturing at Harvard University on the psychology of music and who later held the position of Curator of the Art Museum in Boston. Dr. Gilman's scholarly treatment of this subject was contained in a paper entitled "Zuñi Melodies."⁹ Dr. Fewkes continued his use of the phonograph and published several important articles on the subject.¹⁰

In 1891, the expedition moved from Zuñi to the Moqui or Hopi villages in Arizona and Dr. Fewkes recorded a number of Hopi songs which were studied intensively by both Dr. Gilman and Dr. Fewkes, the former writing a book of more than 200 pages on

⁷ *Id.* On Certain Songs and Dances of the Kwakiutl Indians of British Columbia. Journal of American Folk-lore, Boston, 1888.

⁸ Fewkes, Jesse Walter. A Contribution to Passamaquoddy folk-lore, Journ. Am. Folk-Lore, vol. III, no. XI, pp. 257-280. Boston, 1890.

⁹ Gilman, Benjamin Ives. Zuñi Melodies, Jour. Am. Archaeology and Ethnology, vol. I, 63-91, 1891.

¹⁰ Fewkes, J. W. On the Use of the Phonograph among the Zuñi Indians. American Naturalist, July 1890, pp. 687-691.

Id., Additional Studies of Zuñi Songs and Rituals with the Phonograph. American Naturalist, Nov. 1890, pp. 1094-1098.

the result of this work.¹¹ Seventeen songs are presented in ordinary musical notation and also in a "phonographic notation" consisting of notes placed on equidistant parallel lines, 11 to 24 in number. The trend of the melodies is also shown by ascending and descending lines on similar parallels.

The position of both Dr. Gilman and Dr. Fewkes, from the beginning of their research, has been radically different from that of Professor John Comfort Fillmore, who wrote on the subject about two years after the publication of *Zuñi Melodies*. Professor Fillmore believed that the Indians have a "subconscious sense of harmony" similar to that which is developed in the music of the white race, while Dr. Gilman denied the existence of even a "sense of scale." Dr. Gilman said:

What we have in these melodies is the musical growths out of which scales are elaborated, and not compositions undertaken in conformity to norms of interval order already fixed in the consciousness of the singers. In this archaic stage of the art, scales are not formed but forming.¹²

He called the Zuñi songs "examples of music without scale." Concerning the Hopi songs he said:

The singer's musical consciousness seems restricted to a few intervals of simplest vibration ratio approximately rendered, and to melodic sequences formed by their various analysis and synthesis and rendered with a certain loose fidelity.¹³

After presenting arguments both for and against the existence of "scale" in Indian music the author states that:

The evidence of the present notations bears strongly against the diatonic theory of this music.

However, he admits that:

A measure of coincidence with the diatonic scale is implied in a predominant use of approximations to intervals of simplest ratios.¹⁴

Dr. Gilman states that the intervals of the songs varied greatly in repetitions by the same or another singer. This is not in accordance with the experience of the present writer in recording about 1600 Indian songs and may have been due in part to the lack of

¹¹ Gilman, B. I. *Hopi Songs*. Boston, 1908.

¹² *Zuñi Melodies*, *op. cit.*, p. 89.

¹³ *Hopi Songs*, *op. cit.*, p. 5.

¹⁴ *Hopi Songs*, *op. cit.*, p. 6.

uniform speed in the recording phonograph, a defect which was practically corrected in the phonograph a few years later. The phonograph first taken into the field by Dr. Fewkes was run by a treadle. The machine used in recording the Hopi songs was provided with an electro-motor and a storage battery. Subsequently, the spring motor was found to be a more satisfactory motive power, and the present cylinder type of phonograph became established.

It has already been noted that the study of Zuñi and Hopi music with the phonograph was made possible by Mrs. Mary Hemenway. It is an interesting coincidence that the musical study among the Omaha Indians by Miss Alice C. Fletcher was made possible in its later years by the generosity of Mrs. Mary Copley Thaw. Reference has been made to Miss Fletcher's work on the *Wawan*, published in 1884, which included a consideration of the music. In 1888 she sent an Omaha song to Professor John Comfort Fillmore of Milwaukee, Wisconsin, with a request that he examine it from the standpoint of a musician. This led to an association with Professor Fillmore which continued until his death in 1898. He studied the songs noted down by Miss Fletcher, transcribed her phonograph records and visited the Omaha reservation under the guidance of Mr. Francis La Flesche. This visit enabled him to hear many of the old songs. Miss Fletcher's book entitled *A Study of Omaha Music* was published in 1893 by the Peabody Museum of American Archaeology and Ethnology of Cambridge University and included a "Report on the Structural Peculiarities of the Music" by Professor Fillmore. This book contains 92 Indian melodies, 89 of which were harmonized by Professor Fillmore, somewhat in the manner of hymns or chorals. The remarkable extent of Miss Fletcher's work prior to this time is shown by her statement that during the previous ten years she had "transcribed several hundreds of Omaha songs and . . . taken down songs of the Dakotas, Otoes and Poncas." Her study had also included the Pawnee and Nez Perce tribes.¹⁵

¹⁵ Fletcher, A. C., aided by La Flesche, F. *A Study of Omaha Indian music. With a report on the structural peculiarities of the music by John Comfort Fillmore, A. M., Arch. and Eth. Papers, Peabody Mus., Harvard Univ., vol. 1, no. 5, p. 9. Cambridge, 1893.*

The following statement by Miss Fletcher concerning the intervals used in Indian songs is interesting and important.

During the earlier years of my studies I was, with other observers, inclined to believe in the theory of a musical scale in which the interval of a tone was divided into many parts; but, for several years now past, having become more familiar with the Indian's mode of thought and feeling concerning music, and as a result of careful investigation of hundreds of songs which I have transcribed, I have been led to account for his peculiar intonations in other ways than in the use of a minutely divided scale.

(From Study of Omaha Music, p. 152)

If Professor Fillmore had limited himself to a statement that the line of least resistance in the songs under analysis appeared to be the upper partials or overtones of a fundamental, he would not have aroused the controversy which befell his work. On the contrary, he claimed that Indians have the same sense of harmonies that is possessed by cultured musicians of the white race, including changes of key, and he made no distinction between the songs as actually sung by the Indians and the same melodies harmonized according to his own ideas with the approval or concurrence of the Indians. The term "Indian music" was applied to both. He spoke and wrote as a musician of the "romanticist" type, and his work was assailed by men who were accustomed to choose their words with care.

The following are among the more conservative of Professor Fillmore's statements concerning the structure of Indian songs:

It seems clear that . . . the sense of key-relationship and of harmonic relations . . . is at least subconsciously present in the Indian mind. For when the melodies are given in correct pitch and with natural harmonies the Indians soon come to recognize and enjoy them.

My experience . . . has led me to think . . . that the harmonic sense is universal. It seems clear to me that the course of these melodies can be accounted for in no other way than on the assumption that the Indian possesses the same sense of a tonic chord and its attendant harmonies that we do; although, of course, it is latent and never comes clearly forward into his consciousness. . . . At first, perhaps, there is merely a feeling for the tonic chord, arising from the complex nature of a single tone with its consonant overtones.¹⁵

The substitution of the term "major triad" for "tonic chord" would have protected Professor Fillmore from criticism but he meant "tonic chord" in the sense of its meaning to a musician.

¹⁵ A study of Omaha music, *op. cit.*, pp. 74, 76, 77.

In addition to his work with Miss Fletcher on the music of the Omaha and related tribes Professor Fillmore was associated with Dr. Franz Boas and Mr. H. E. Krehbiel in the study of primitive music at the Columbian Exposition in Chicago, 1893. He prepared a paper treating of the songs of the Navaho, Kwakiutl, Yaqui, Tigua and Omaha, as well as the songs of the Fiji, Dahomey, Arabs and South Sea Islanders, and was on his way to present this paper before the American Association for the Advancement of Science when death ended his labors. One of the last sentences in this paper is,

Folk-melody, so far as now appears, is always and everywhere harmonic melody.¹⁷

To Professor Fillmore, as well as to Miss Fletcher, the writer desires to acknowledge her indebtedness. It was her privilege to meet Professor Fillmore about the year 1892 and to hear him talk upon Indian music. His enthusiasm was inspiring, and later the gracious kindness of Miss Fletcher encouraged her in the study of Indian music.

Dr. Boas, in his analytical notes on the Eskimo songs published in 1888 stated that "On the whole, the melodies, even to our musical sense, can be traced to a keynote."¹⁸ He divided these songs into two distinct groups, the first containing the tones of what is commonly called the major pentatonic scale, and the second containing the tones of the minor pentatonic scale with the sixth omitted. The seventh is used as a leading tone in the first group. (The scale commonly known as the "major pentatonic" is the "fourth pentatonic" according to Helmholtz and can be played on the black keys of the piano with F sharp as the keynote. The "minor pentatonic" is the "second pentatonic" according to Helmholtz and can be similarly played with D sharp as its keynote.)

An important contribution to the subject of Indian music was made by Dr. Boas in 1896.¹⁹

¹⁷ Fillmore, John Comfort. *The Harmonic Structure of Indian Music*, American Anthropologist (N.S.), Vol. 1. April, 1899.

¹⁸ Boas, F. *The Central Eskimo*, *op. cit.*, p. 648.

¹⁹ *Id.*, Songs of the Kwakiutl Indians. Intern. Arch. f. Ethnog., 1896, 9, Suppl., 1-9.

It will be noted that all the writers thus far quoted on the structure of Indian music are agreed on one point, that the songs contain many tones having simple ratios of vibration, these being, of course, the first upper partials or overtones of a fundamental. The divergence among these authorities arises, in part, from the different interpretations placed upon the tones *other* than these, occurring in the melodies. Some regarded these tones as having very great significance, while others held that they had no significance at all. For instance, let us suppose we are considering a melody whose principal tones are C, E, and G, with C in the upper octave and A as an unaccented tone. This suggests the "key" of C, with the simplest overtones of C and with A as a passing tone. Suddenly the tone F sharp is introduced into the song. If we were to follow Professor Fillmore's reasoning we should regard this as an indication of a "change of key," but if we were to follow that of Dr. Gilman we should regard it as "being in itself an argument against the possession of any scale-consciousness by the singers."²⁰

A phonograph was used by Dr. Washington Matthews in recording Navaho songs and his book entitled *Navaho Legends*,²¹ published in 1897, contained 11 songs which were transcribed by Professor Fillmore. These included "The approach of the war gods," "Song of the war gods," "Daylight song," and a "Night chant." The rhythm of these songs is very simple; they are transcribed in the treble clef, and some are designated as sung in falsetto.

Indian music, as a phase of native life, has always engaged the attention of scientists, and descriptions of musical customs, the words of songs, and some transcriptions of songs in musical notation have been included in their works on the American Indians. It is manifestly impossible to refer to all such data concerning Indian music, and the present paper is limited to Indians living north of Mexico. The following references may, however, indicate the extent to which the subject received attention during the latter part of the nineteenth century.

²⁰ Hopi Songs, *op. cit.*, p. 9.

²¹ Matthews, Washington. *Navaho Legends*, Houghton, Mifflin and Company, New York, 1897.

Twenty songs in musical notation were given by Hoffman in his work on the Midewiwin,²² and Mooney presented the words of 138 songs with numerous transcriptions in his book on the Ghost Dance,²³ while Dr. Boas published transcriptions of Kwakiutl songs in his work on that tribe.²⁴ Musical customs were described by Dr. Dorsey²⁵ and Dr. Fewkes,²⁶ as well as by other scientists of the United States, and Cringan contributed to the subject in Canada.²⁷

Mention should here be made of Carlos Troyer, who went among the Zuñi in 1888 and, during a long residence among these Indians, recorded many of their songs. He was a writer on the subject of Indian music, and also the first musician to arrange Indian songs for concert use, providing words in metric English verse and the conventional form of piano accompaniment.²⁸

²² Hoffman, Walter James, M.D. *The Midewiwin or "Grand Medicine Society" of the Ojibwa*, in 7th Rep. Bur. Amer. Ethn., Washington, 1891.

²³ Mooney, James. *The Ghost Dance Religion*, in 14th Rep. Bur. Amer. Ethn. Pt. 2. Washington, 1896.

²⁴ Boas, Franz. *The Social Organization and Secret Societies of the Kwakiutl Indians*, in Rep. U. S. Nat. Museum, Washington, 1897.

²⁵ Dorsey, James Owen. *Siouan Sociology*, in 15th Rep. Bur. Amer. Ethn., Washington, 1897.

²⁶ Fewkes, Jesse Walter. *Tusayan Katchinas*, in 15th Rep. Bur. Amer. Ethn., Washington, 1897.

²⁷ Cringan, Alexander T. *Description of Iroquois Music*, in *Archaeological Report*, App. Rep. Min. Education Ontario, Toronto, 1898; also other Iroquois music.

²⁸ Miss Densmore's modesty has made her remain silent as to her own contributions. The Editors desire to point out that her studies began as early as 1893, under the stimulation of Miss Fletcher's book, though at first her interest was that of a musician only. From 1895 on she lectured widely on Indian music and availed herself of every opportunity for hearing it. About 1900 she noted by ear melodies sung by Minnesota Indians, and in 1901 made her first field trip to the Ojibwa on the north shore of Lake Superior. Her phonograph studies commenced in 1907, shortly before her connection with the Bureau of American Ethnology. Her subsequent activities in this field are generally known. ED.

THE TIPIS OF THE CROW INDIANS

By WALTER STANLEY CAMPBELL

THE Crows, of all the tribes in this region, or on the Continent, make the most beautiful lodge," says Catlin,¹ and his enthusiasm has found an echo in the words of many a later observer. To this day the Crow pride themselves, quite justly, upon the size and beauty of their tipis. They have been able to maintain these shelters in greater numbers than most Indians of the Plains, owing to their proximity to the Bighorn Mountains, where lodge-poles are readily obtainable. This habit and this pride have been stimulated by the tempting rewards held out to tipi-owners by the motion picture companies which periodically descend upon the Reservation in search of Indian subjects for the screen. Perhaps also the peyote cult has helped, in some measure, to preserve the tipi. At any rate, although the Indians now live in houses, tipis and tipi poles are still to be seen alongside.

This fact makes possible an accurate record of the pattern and structure of the Crow tipi, as well as a comparison with the lodges of other tribes with a view to ascertaining wherein the alleged superiority of the Crow tipi resides. Such a record and comparison is the object of this paper.

Whatever differences tipis may exhibit are due primarily to the arrangement of the poles, since this conditions the cut of the canvas. In general, all the tribes of whose tents we have reliable accounts use one of two possible types of pole-arrangement. In one of these types, three poles are first set up and the other poles are laid against this tripod: in the other type, the foundation consists of four poles. From this difference in structure spring certain general characteristics which distinguish the types.

The Crow use the second type (the four-pole tipi) along with the Blackfoot, Sarsi, Ute, Shoshoni, Omaha, Comanche, and, of course, the Hidatsa.² A study of photographs would indicate that

¹ Catlin. *Letters and Notes on the Manners, Customs, and Condition of the North American Indians*. London, 1844, vol. I, page 43.

² Lowie, R. H. *The Material Culture of the Crow Indians*. *Anthropological Papers of the American Museum of Natural History*, vol. XXI, part III, page 223.

the Kutenai, Flathead, and Nez Perce³ also use this type, as one might expect from their geographical position. Tribes known to have used the three-pole type include the Cheyenne, Arapaho, Teton Sioux, Assiniboin, Kiowa, Gros Ventre, Plains-Cree, Mandan, Arikara, and Pawnee.⁴ To this list I may add from personal observation the Ponca, Oto, and Wichita.

The chief merit of the tipi as a shelter is that it may contain a fire, and of course the smoke-hole must be above this central fire. If the tipi were a perfect cone, the smoke-hole would center around the crossing of the poles at the apex, and, if the hole were large enough to serve its purpose, could never be closed in wet weather. For this reason, one may suppose, tipis are always tilted cones: the smoke-hole, instead of centering around the apex, extends well down the more slanting side (the front of the tent). This places the crossing of the poles at the top end of the smoke-hole, instead of in the middle, and makes possible the closing of the hole by means of overlapping flaps, provided the poles lie snugly together. In small tents with few poles no difficulty is encountered, no matter how the poles are set up. But in larger tents with many poles a haphazard arrangement of the poles results in such a bulky mass at the apex that the smoke-hole is choked, and cannot be closed. Accordingly, we find that a definite order is observed in each type, apparently with the purpose of solving this problem.

Many observers have recorded the order of placing the poles, but nearly always with regard to the position of the butts on the ground (a minor matter, really), and have omitted to note the position of the upper ends of the poles (the essential thing). The order (on the ground) of the three-pole type actually reverses the order of the four-pole type; yet the solution of the problem is really the same in both. Both mass the upper ends of the poles in the crotch at the front of the tent (towards the middle of the smoke-hole), and away from the back of the tent (the top of the

³ Nez Perce, v. photograph so identified by Bureau of American Ethnology; but cf. H. J. Spinden, *Memoirs of the American Anthropological Association*, vol. II, part 3, page 197.

⁴ Lowie, *ibid.*

smoke-hole). Some poles, it is true, must rest in the crotches at the side and back, but the front crotch holds as many as possible.

In solving this problem, the three-pole tipi is the more successful. In this type a larger proportion of the poles rest in the front crotch, and it is obvious that a number of poles will lie more snugly together if all in one crotch than if distributed in three or four. Hence, the canvas of the three-pole tipi fits more snugly at the back of the tent, and the smoke-hole extends farther down the front of the tent. The four-pole tipi, on the other hand, has



FIG. 1.

FIG. 1. Crow tipi framework, with canvas pole in place. Observe how the poles cross and form two apices, one above another.

necessarily a smaller front crotch than the tripod, and distributes its poles more evenly all around the top. As a result, the four-pole tipi has two apices or crossings of the poles. One is formed by the crossing of the foundation poles, and the other (somewhat above) by the crossing of the remaining poles, as shown in Figure 1.

Now, since the top of the canvas cannot possibly be raised above the projecting ends of the poles of the lower apex (the four foundation poles), it is clear that a considerable opening must always remain at the top of the tent, no matter how the smoke-flaps may be managed. The canvas cannot extend to the top of the framework.

For this cause, perhaps, the makers of four-pole tipis seem to prefer a less tilted cone than the three-pole folk; for, since the upper end of their smoke-hole is always open and spread wide by the poles, there is no gain in extending it far down the side of the tent. At any rate, the smoke-holes of four-pole tipis are uniformly shorter than those of the other type, and are set higher. As the cone is less tilted, so the floor-plan is elliptical, or more nearly circular, in the four-pole tipi. The three-pole tipi has an oval floor-plan.

This difference in structure affects the cut of the canvas, as may be seen in Figure 2, which shows the smoke-flaps of Blackfoot, Crow, Cheyenne, and Teton Sioux tipis of similar size drawn to scale. The Crow and Blackfoot (four-pole tents) are distinguished by very wide flaps set far apart in order to reach around the bulky mass of poles as arranged in this type. The Cheyenne and Sioux have longer, narrower flaps set near together, indicating the characteristic long smoke-hole and compacter nesting of the poles in this type. In all four tents gores or triangles are inserted to widen the flaps at the top. In the Blackfoot and Crow these gores run the full length of the flap, while in the Cheyenne they are much abbreviated, and appear quite small in the Sioux. This is due to the fact that the Sioux tilt their cone more than the Cheyenne, as the Cheyenne is more tilted than the Crow, and the Crow than the Blackfoot. No tipi is a perfect cone.

Contrary to the opinion of Grinnell's Blackfoot informants,⁵ most Crow tipis have very long poles. This impression is endorsed by Rev. W. A. Petzoldt, for many years a missionary to the Crow, and the possessor of a large collection of excellent photographs,

⁵ Grinnell, G. B. Lodges of the Blackfeet, *American Anthropologist* (n. s.), vol. 3, no. 4, page 655

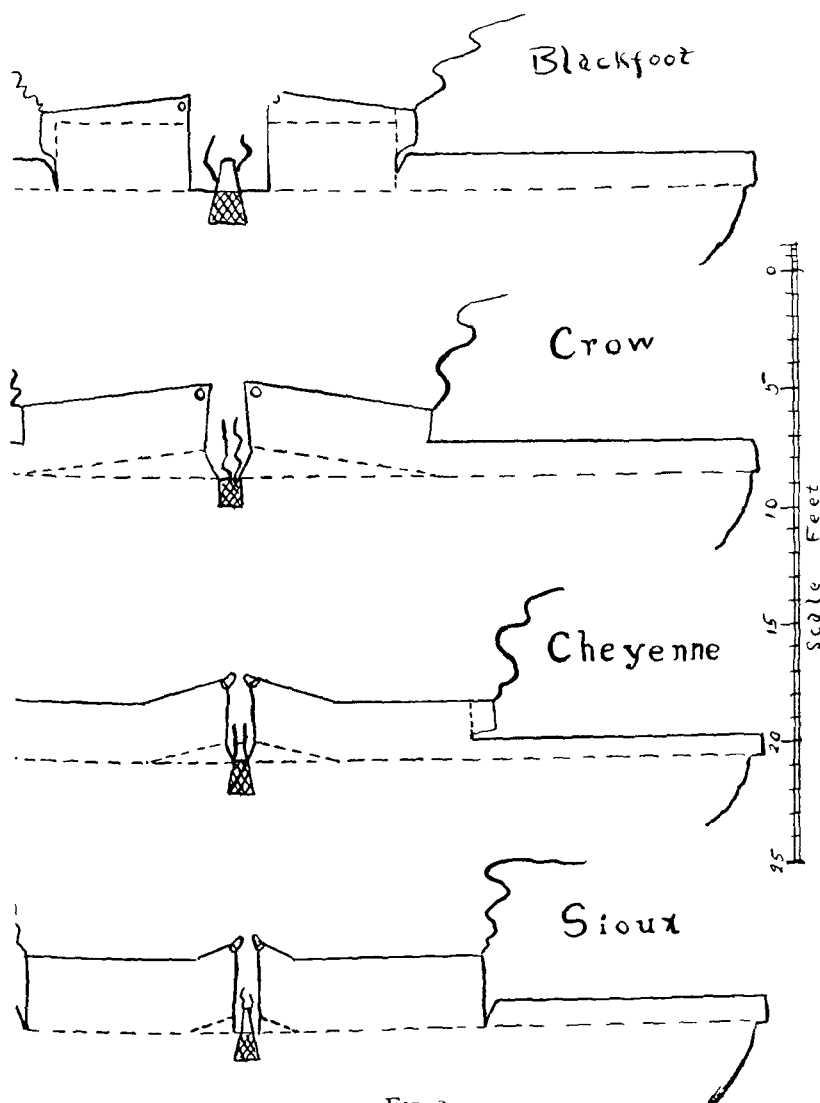


FIG. 2.

FIG. 2. Plains Indian tipi patterns compared

of which I have been permitted to make use. Indeed, the Crow tipis are remarkable for the extraordinary length of their poles⁶

⁶ Lowie, *ibid.* Page 223. See also, Clark Wissler, *Material Culture of the Blackfoot Indians*, Anthropological Papers of the American Museum of Natural History, vol. v, part 1, page 112.

(thirty or even forty feet) which extend far above the top of the tent proper, giving it the appearance of an hour-glass. See Figure 1.

To obtain such long poles Crow women go to considerable trouble. Unlike some others, they are not content to pare away the bark alone, but also shave off a goodly portion of the wood as well, until the pole has been reduced to the desired diameter and smoothness. This extra labor enables them to have longer poles than less industrious women, since it is manifest that a pine tree forty feet tall will be much too thick at the base to serve as a tipi pole, unless pared down. The Blackfoot are said to make a set of poles in one day,⁷ but a Crow expedition into the mountains for poles will consume a week or more. Although the range is nearby, a good set of poles is valued at not less than \$25.00. Having long poles, the Crow make large tipis, though they usually appear to be larger than they are. Catlin and Maximilian both speak of the large size of Crow tipis. However, it is pretty certain that the Crow, like other tribes, had also small, light lodges for rapid travel. Two or three horses were required to transport a large tipi, and certainly dogs could not have drawn such poles as are in use today. Some data on the size of ancient tipis might be gathered by measuring the stone rings left on the prairie where tipis stood in the days before pegs were in use.⁸

In preparing the poles, the woman uses a drawing-knife and stands astride the pole, clasping it between her knees. The weight of the pole rests in the crotch formed by four slanting stakes driven into the ground and crossing at a height of about three feet. As the work goes on, the pole may be slipped back and forth and nicely balanced upon this support, thus materially lightening the labor.

The finished poles are lashed upon the frame of a wagon and brought off the mountains to camp, where they are set up as though to receive the canvas and allowed to season for a time. Their greatest diameter is now from three to five inches. They

⁷ Grinnell, *ibid.*, page 654.

⁸ Cf. Lowie, *ibid.*, page 224.

are stiff, straight, smooth, and pointed at the butts to prevent slipping on the ground. Limber poles are not used. I have not observed that Crow poles are thicker or heavier than those of other tribes: they differ only in length. In constant use they may last for several years, but hardly—as Catlin seems to have thought—for more than a century!

Noting the wide spacing of the Blackfoot flaps (Fig. 2), one might assume that they used more poles than the Crow. This is the case.⁹ The Cheyenne, Arapaho, and Sioux also use more, and probably all the three-pole tribes. Possibly the great length of Crow poles produces a balance that braces the canvas more firmly. At any rate, the tribes mentioned all use five or six more poles in a tipi of a given size than the Crow do. Catlin¹⁰ tells us that the poles of his own Crow tipi were “about thirty in number.” However, observation in the field and the study of some scores of photographs (old and new) have failed to reveal a Crow tent having more than twenty-two. Some quite large tents have only sixteen.

Figure 3 shows the canvas of a Crow tipi drawn to scale. It approximates a semi-circle with a radius of twenty-two feet. Dotted lines indicate seams; cross-hatching, reinforcement. As compared with the Cheyenne,¹¹ it differs chiefly in the width, length, and position of the smoke-flaps, as already explained. One or two more superficial differences may be mentioned: one, the absence, in the Crow tent, of the small free flaps or curtains attached to the base of the Cheyenne (and Blackfoot) smoke-flaps; the other, the use by the Crow of eyelets or perforations to receive the poles which support the flaps. The Cheyenne, like most three-pole tribes, use pockets. In spite of the assertion of the Blackfoot,¹² I have been unable to find any Crow tent using pockets; only the Comanche, Ute, and Shoshoni¹³ among the users

⁹ Grinnell, *ibid.*, page 654.

¹⁰ Catlin, *ibid.*, page 44.

¹¹ The Cheyenne Tipi, *American Anthropologist* (n. s.), vol. 17, no. 4, page 686.

¹² Grinnell. *Lodges of the Blackfeet*. *American Anthropologist* (n. s.), vol. 3, no. 4, page 655.

¹³ Wissler. *Material Culture of the Blackfoot Indians*, *Anthropological Papers of the American Museum of Natural History*, vol. v, part 1, page 109.

of the four-pole type seem to prefer pockets. Undoubtedly, the eyelet makes for beauty, since it allows the flap-poles to extend up beyond the tops of the flaps in graceful contrast to the lines of the inside poles. I found a modified Cheyenne canvas in use among the Crow and stretched over the typical four-pole structure of poles. The pockets had been removed and eyelets made instead, which goes far to prove the Crow preference for this feature. This tipi was handsomely decorated in the Cheyenne manner, a gift-tipi from Oklahoma, and one of which the Crow owner was obviously proud.

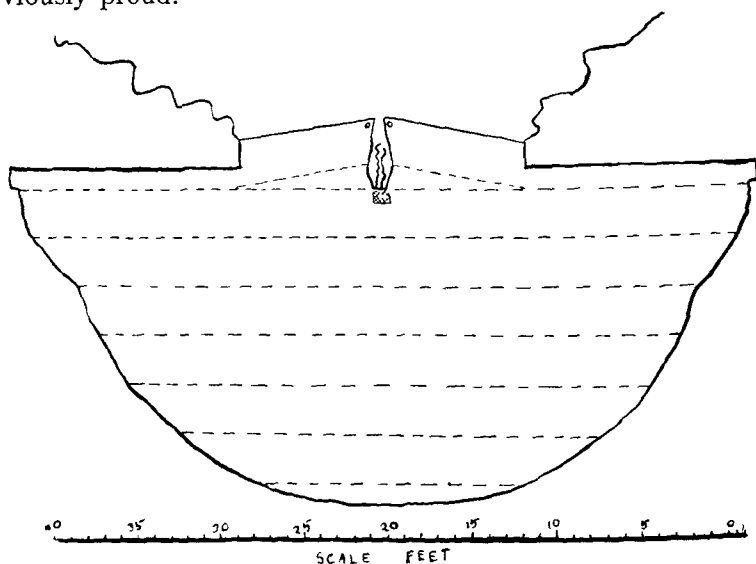


FIG. 3.

FIG. 3 Crow tipi canvas laid flat. Dotted lines indicate seams; cross-hatching, re-inforcement

Two women share the work of pitching a Crow tipi. Four poles are laid in pairs to cross at right angles, as shown in Figure 4. These are the four foundation poles, and are so laid down that the butts of one pair (N.E. and S.E.) rest upon the ground about where the door is to be, while the butts of the other pair (S.W. and N.W.) rest about where the back of the tent is to be. Tipis normally face the east.

The first time the tipi is set up, the proper crossing of the poles is ascertained by measuring each pair along the vertical axis of the

canvas of that part of the tent each pair is to support; afterward, the women mark the place on the poles and obviate the labor of future measurements. This labor-saving device seems peculiar to the Crow. It is a credit to their intelligence, since the finding of the proper place for the crossing of the poles is probably the most troublesome step in the process of pitching a tipi.

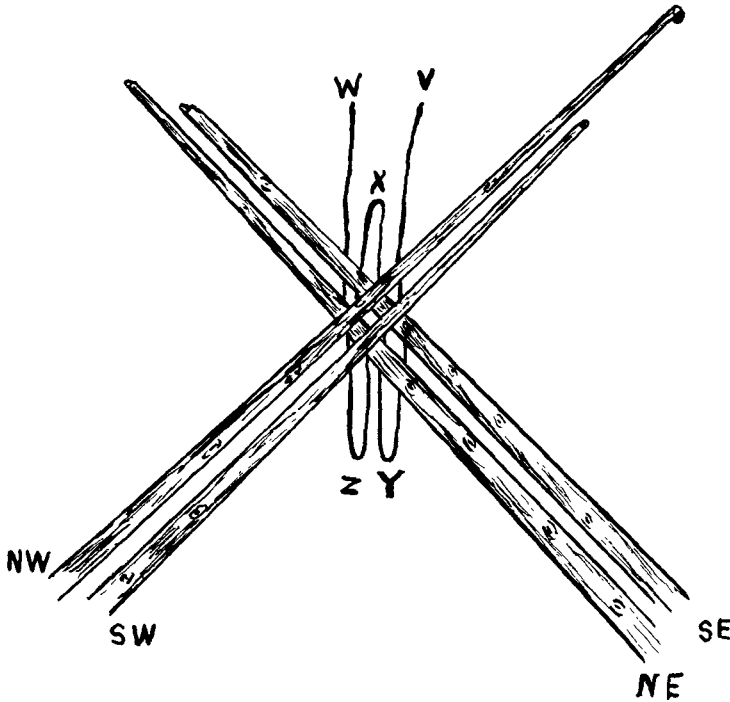


FIG. 4.

FIG. 4. The Crow tie. Four foundation poles laid down, with thong ready to knot.

Under the crossing of the poles is laid a rawhide thong half an inch broad by six or eight feet long, as shown in Figure 4. The woman then takes loop X, passes it over the crossing of the poles and through loops Z and Y. Then, returning loop X back over the crossing of the poles and drawing it tight, she passes one of the loose ends W through loop X. Drawing the end W tight, she ties it firmly to loose end V. This is the Crow tie.¹⁴ Afterward,

¹⁴ Cf. Wissler, *ibid.*, pages 99 and 113, for other ties.

the woman repeats the same tie, using a piece of quarter-inch rope, for greater strength. One end of a long guy-rope is attached last of all by means of a couple of turns round the crossing and a square knot. Then the foundation is ready to be set up. Sometimes two such guys are used.



FIG. 5.

FIG. 5. Raising the Crow foundation poles after tying. Note use of long guy ropes.

Measurements on the poles before pitching showed the distance of the butts of the front poles (N.E. and S.E.) from the knot at the crossing to be twenty-one feet, six inches: back poles (N.W. and S.W.), twenty feet, seven inches. Such measurements would vary with the size of the tipi. They are set down to indicate the tilt of the cone in this case.

One of the women now lifts the crossed poles above her head, and advancing towards the butts of the back pair and pushing the poles upward all the time, raises the whole to a vertical plane, while the other woman assists her by pulling on the guy rope. See Figure 5. Then the poles of the back pair are separated, and

afterward the poles of the front pair. It is then seen that the butts of the four poles mark an oblong upon the ground, and that the top pole of one pair (SE in Figure 4) stands at the corner of the rectangle opposite to the top pole of the other pair (NW in Figure 4). This transposition of the foundation poles locks them securely. In the tipi measured, the poles of each pair stood eleven feet apart: the distance between pairs was twenty feet. Of course, measurements will vary with the size of the tipi.

Working simultaneously on opposite sides of the tipi foundation, the two women complete the structure by adding the remaining poles. Each one plants the sharp butt of the pole she is handling against the butt of one of the poles already in place, and then, walking up under the pole, raises it to a vertical position, carries it so to the place where the butt is to rest, and then lowers the top into its proper place. Crow poles are too long to be raised in any other manner.

The ground-plan of a Crow tipi is shown drawn to scale in Figure 6. In the center, the crossing of the four foundation poles is indicated by the crossed lines, and the crotches so formed are marked with the letters E, W, N, S, indicating the cardinal points which they normally face. The poles are indicated by numbered circles, the numerals indicating the order of their placing. Letters added to the numerals indicate the crotches in which the poles rest, respectively, at the top of the structure. The four foundation poles (solid black disks) are indicated by letters which correspond to those in Figure 4. CP indicates the position of the pole which carries the canvas, the last pole set up. It alone rests in the west crotch.

Owing to the greater number of poles used, I suppose, the Blackfoot place more than the one pole in the west crotch in large tipis. Their knot also is simpler, resembling the Cheyenne tie. Otherwise, there is little difference in the structure of Crow and Blackfoot tipis. They present a great contrast to the three-pole type. In the Cheyenne, the first pole is set up at the front, the last at the back. In the Crow, the reverse is true, though, as pointed out above, both methods result in a massing of the poles in the front crotch. In very large tipis of the four-pole type more than

half the poles may rest in the front crotch, but always an even number. In the three-pole type, two-thirds of the poles rest there.¹⁵

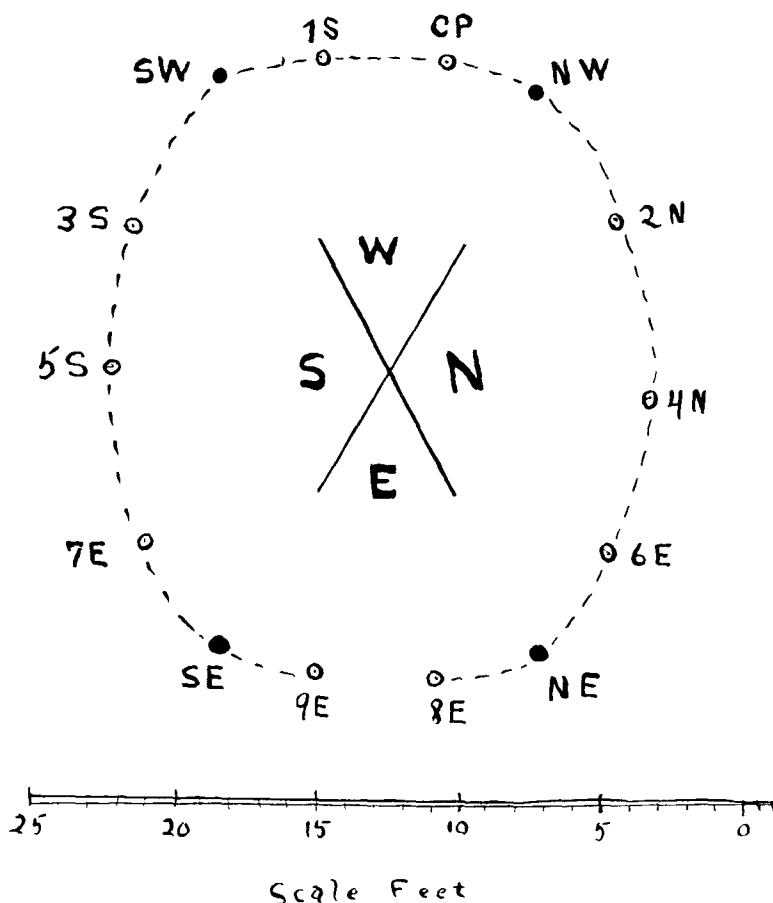


FIG. 6. Ground plan of Crow tipi. Note elliptical plan, and massing of poles at top towards the east. Circles represent poles. Numerals indicate the order of their placing. Letters added indicate the crotch (E, W, N, S) in which the top of the pole rests. CP indicates canvas-pole. SE, NE, NW, SW indicate the four foundation poles.

The structure completed, the women lash the canvas to the canvas pole at the proper height by means of the ties attached between the smoke-flaps. A guy-rope is fastened to the pole at the same place. Then one woman raises the pole bearing the

¹⁵ The Cheyenne Tipi, *American Anthropologist* (n. s.), vol. 17, no. 4, page 689.

canvas, while the other pulls upon the guy-rope. See Figure 7. The canvas pole is then lowered into the west crotch. See Figure 1.

The women now take each one side of the canvas, carry it around the framework on opposite sides, and meet at the front. Although the four foundation poles are in place, the others are much more nearly vertical than they will be later, and the two



FIG. 7. Raising the pole which carries the canvas. Note guy rope.

poles next the door are converted into a ladder by lashing short rungs across them at intervals, so that the woman may mount up and pin the front of the tent together, beginning at the bottom of the smoke-hole and continuing to the top of the door. Sometimes a ready-made ladder is leaned against these poles, which saves time. The skewers used to pin up the tent are of cherrywood, pointed at one end and bared of bark, measuring twenty-one inches long by three-eighths of an inch thick. One is needed for

every six or eight inches down the front of the tent. As in other tribes, the canvas is lapped left (south) over right, and the skewers thrust in from right to left. Holes are already prepared.

While one woman is pinning up the front of the tent, the other one is busy making the canvas taut across the front and back (between the foundation poles) and in lashing the bottom of the canvas to the butts of the four foundation poles. (See Figure 8.) When this has been done, the flap-poles are put in place.

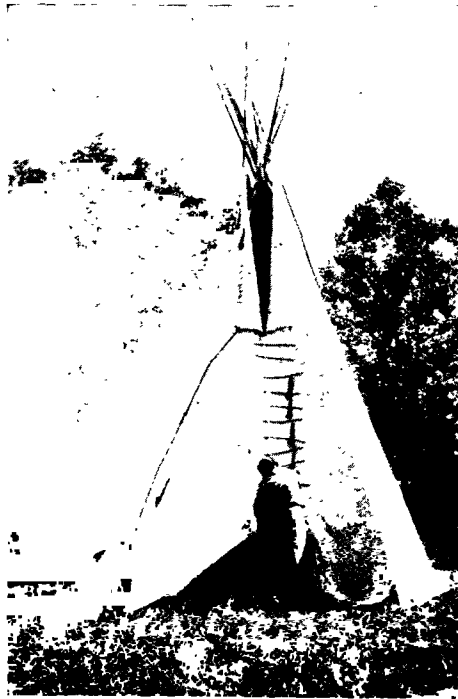


FIG. 8. Pinning up the front of the tipi, and lashing the canvas to the butts of the foundation poles.

Crow flap-poles are just like the other poles, whereas in tipis with pockets on the flaps, much shorter poles would have to be used. The Crow lash a four-inch twig across the pole at a convenient height (in this case twenty-three feet from the butt), so that the pole cannot slip too far through the two-inch eyelet, letting the flap sag. The flap-poles, like the foundation poles, once measured, are marked for future reference.

The door-peg is now driven through the loops attached to the two sides of the canvas. Then the women go inside and move the butts of the poles at the side and front of the tent outwards until the canvas is taut all round. Then pegs are driven through the loops all round outside the tent. The loops are attached in the Cheyenne manner about eight inches from the edge of the canvas, preferably at the ends of seams. Last of all a stake five or six feet tall is set up a few yards in front of the door, and to the top of this hitching-post the thongs which hang from the bases of the smoke-flaps are tied. In stormy weather the inside guy-rope may be tied to a knobbed anchor peg driven into the ground near the fireplace, and the outside guy tied to a peg or convenient tree. Photographs show as many as four guys outside and two inside the tent. McClintock¹⁶ shows similar guys in use among the Blackfoot.

Crow doors, linings, back-rests, and other furniture are similar to those used by other Plains tribes, and have been described by Lowie.¹⁷

The decoration of the Crow tipi now consists chiefly in the application of painted designs, and even this is rare. On a recent visit to the Reservation I saw but one painted tipi, and the designs—a thunderbird and a five-pointed star—showed much European influence. Lowie says

In the realistic ornamentation of their tents they are distinctly inferior to the Blackfoot.¹⁸

and, we may add, to the Sioux, Kiowa, and Arapaho. Usually, only bands of color around the top or bottom of the tent, across the back, or around the door are seen. An exception appears in Figure 9. Others are shown in Dr. Lowie's paper on Crow Art page 318.

After telling how the Crow "beautifully garnish" their tipis with porcupine quills, and paint and ornament them in such a variety of ways as renders them exceedingly picturesque and agreeable to the eye,

¹⁶ McClintock. *The Old North Trail*. London, 1910. *v. ill.*, page 130.

¹⁷ *Material Culture of the Crow Indians*, Anthropological Papers of the American Museum of Natural History, vol. XXI, part III, page 224.

¹⁸ Lowie. *Crow Indian Art*, Anthropological Papers of the American Museum of Natural History, vol. XXI, part IV, page 321.

Catlin describes his own Crow tent in his usual glowing style as highly ornamented, and fringed with scalp-locks . . . with the Great or Good Spirit painted on one side, and the Evil Spirit on the other.

However, his sketch (Plate 20) is not convincing and does not correspond to his description. The painted figure (Good or Evil Spirit ?) carries a gun, and in other respects the tent does not differ from those represented by this artist as of other tribes. In

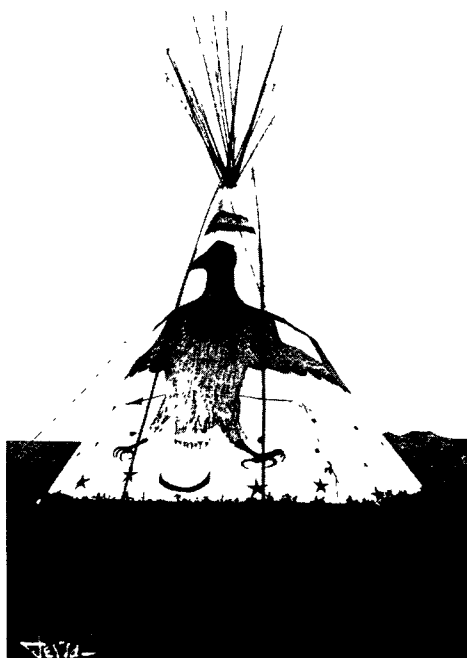


FIG 9 Crow painted tipi. Observe European influence on designs.

one detail the sketch is certainly false, namely in representing a rope about the crossing of the poles above, a device which is entirely impracticable in a four-pole tipi. Catlin also omits the characteristic streamers mentioned by Maximilian.¹⁹

These streamers, I am told, were originally the thongs used to attach the poles to the animals which dragged them on the march: if so, their use as ornaments is secondary. However, Maximilian,

¹⁹ Maximilian. Prince von Wied, *Travels*, London 1843, page 172.

writing at a time when wagons were unknown to the Crow, tells of streamers made of red cloth. It is interesting to note that Mooney found such red streamers in use among the Kiowa, long allies of the Crow.²⁰ Crow streamers are still sometimes of leather, and painted. Other Plains Indians used tufts of hair at the ends of some or all the poles in much the same manner. These are generally called "scalps" by observers—a somewhat doubtful description.



FIG. 10 Crow tipi, with streamers. Note in background tipi poles not in use resting against trees

The beauty of the Crow tipi lies not in superficial ornamentation, but in its impressive size and admirable proportions, the great length of the soaring poles, the graceful curve of the flap-poles above the smoke-hole. The high smoke-hole increases the apparent height of the tent, and the long lines of the poles in the smoke-hole, unbroken by any binding rope, add to this effect.

²⁰ Kiowa Calendar, Seventeenth Annual Report of the Bureau of American Ethnology, part 1, page 337.

But probably the smart cut of the Crow smoke-flap has most to do with the beauty of the tent. As compared with the short, blunt-ended Blackfoot flap, the Crow model is elegance itself. As compared with the ugly oblong of the Sioux, or even the sweeping lines of the long Cheyenne flap, it is much more trim. Probably the Crow tent gains, rather than loses, by the absence of ornament.

As a serviceable dwelling, however, the Crow tent must give place to tipis of the three-pole type, which is stancher. This has more and shorter poles, which offer less hold to high winds. The three-pole tipi binds its poles together at the crossing, and plants the butts in the earth, thus making a very rigid structure. The Crow tent, so far as I can learn, is never thus rooted to the earth. Its poles are held together only by their own weight and the pressure of the canvas. McClintock tells how mischievous young men used to ride through the Blackfoot camps, throwing the loops of their lariats over the tops of tipis and pulling them down. This would not be easy to do with a well-pitched Cheyenne tent. The multiplied inside and outside guy-ropes of Crow and Blackfoot tipis tell the same tale of the weakness of the four-pole tipi. During the past twenty-five years I have seen hundreds of three-pole tipis, and—as I was in the habit of camping in tipis of my own—observed their details with some care. I have never seen an outside guy in use with a three-pole tent. My observation, coupled with much practical experience, has convinced me that the Cheyenne tent is unequalled by any other, of whatever type, for service.

On the score of beauty, it is another matter. Among the three-pole tipis only the Arapaho model approaches the Crow in this regard. And though the Arapaho excel the Crow in ornamentation, it must be granted that the Crow tent, with its white cone, its trim flaps, its double sheaf of poles and trailing streamers, is the stateliest dwelling ever nomad used. However we may cavil at Catlin's exasperating inaccuracies as an ethnologist, I think we may gladly accept the truth of his impressions as an artist:

The Crows, of all the tribes in this region, or on the Continent, make the most beautiful lodge.

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AN ANCIENT INDIAN FISH-WEIR

By CHARLES C. WILLOUGHBY

AS SUPPLEMENTING Dr. Delabarre's article in the July number of the *AMERICAN ANTHROPOLOGIST* regarding the probable subsidence of Grassy Island in Taunton River, southeastern Massachusetts, since the Indian camp site described was occupied, it may be well to place on record the following account of the discovery of the remains of what was undoubtedly an Indian fish-weir, while excavating for the Boylston Street subway in Boston in 1915.

As the excavation reached a point a short distance east of the junction of Clarendon and Boylston Streets, the workmen discovered a number of decayed pieces of wood at a depth of about 30 feet from the street surface. The attention of the engineers was called to these finds, and as work progressed other pieces were unearthed. They seemed to be portions of stakes, two to three inches in diameter, which had been placed upright at intervals in a line running nearly east and west. It is probable that only the larger stakes used in the construction of the weir retained their form sufficiently well to be recognized by the workmen. One of the stakes being unusually well preserved was very carefully uncovered. The silt which buried its upper portion being removed, a layer of very stiff blue clay was encountered, into which the lower part of the stake had been driven. Thinking that these finds might be the remains of an old Indian weir, the engineer notified the present writer, who, in company with Mr. S. J. Guernsey, carefully examined the ground, removed the stake from its position in the blue clay and transferred it to the Peabody Museum at Cambridge for preservation.

Its lower portion was found to have been driven into the clay stratum to a depth of 18 inches. The average diameter of the stake was about $2\frac{1}{2}$ inches and the length of the part recovered was 46 inches. Originally the upper portion was probably longer, for the top seems to have been broken off during the removal of the earth above.

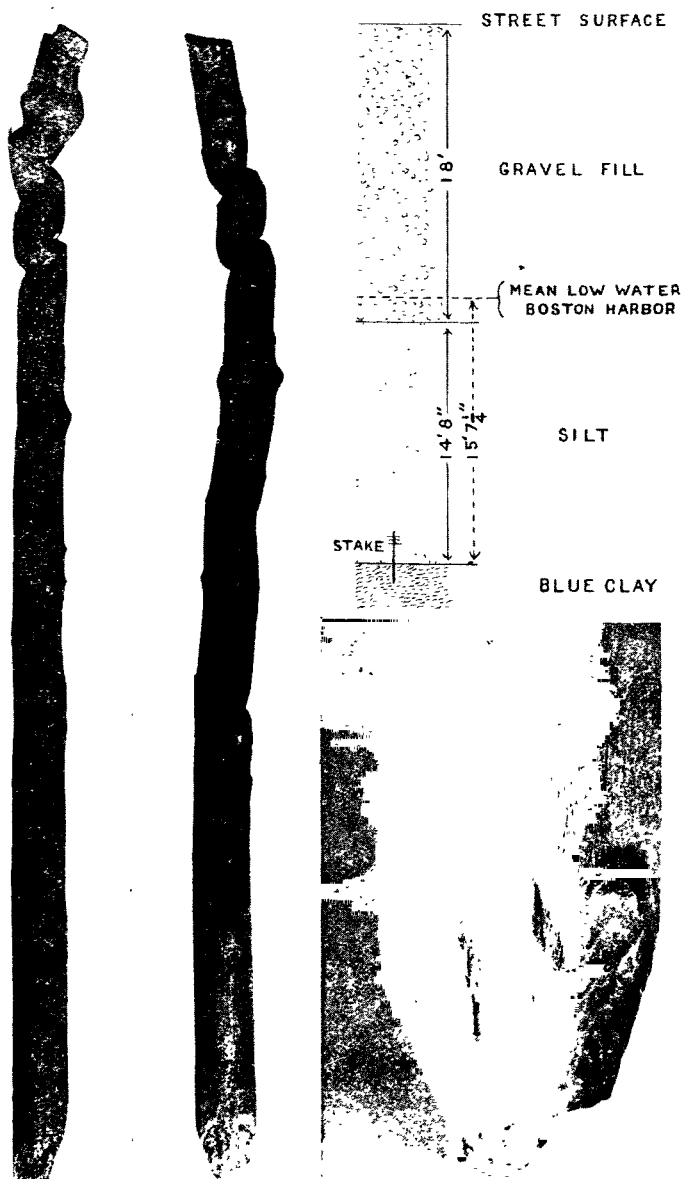


FIG. 1.—Three views of stake from ancient Indian fish-weir found while excavating beneath Boylston Street, Boston. The diagram shows its position when discovered.

The specimen is illustrated in figure 1. Its lower end had been sharpened, presumably with a stone axe, the marks of which are plainly shown in the enlarged photograph. Three feet from its lower end the horizontal wattling began, the alternate depressions, caused by the interlaced withes, being clearly defined. Fragments of two of these withes, which were in contact with the stake at this point, were sufficiently well preserved to be removed without injury. The smaller is about $\frac{3}{8}$ of an inch in diameter and 8 inches long; the other is about $\frac{5}{8}$ of an inch in diameter and 13 inches long.

Wooden objects that have been submerged in mud or water for a long period become very soft and spongy, which accounts for the distortion of the upper portion of the specimen and for the clear definition of the alternate indentations caused by the pressure of the interlaced withes. It is not improbable that the missing part of the stake, if available, would also show similar marks.

While these specimens have considerable archaeological value in themselves, their greatest interest lies in the depth at which they were found. Their position is shown in the diagram, the measurements of which were made and recorded by the engineers in charge of the subway excavations, and may therefore be relied upon.

It is generally known that the Back Bay section of Boston is made land. At the point at Boylston Street where the remains of the weir were found, the fill had a depth of 18 feet. This gravel fill rested upon a stratum of silt, 14 feet 8 inches in depth, which had been deposited by the waters of the Charles River and the Back Bay. Beneath this layer of silt was a stratum of very stiff blue clay into which the stake penetrated to a depth of 18 inches. The top of this clay layer is 32 feet 8 inches beneath the present surface of Boylston Street, and 15 feet $7\frac{1}{4}$ inches beneath mean low water of Boston Harbor as recorded in 1915.

The wattlework of the weir began at a point 3 feet above the lower end of the stake, or 18 inches above the surface of the blue clay layer; therefore there could not have been more than 18 inches of silt overlaying the blue clay at the time of the construc-

tion of the weir, and the mean low water level of the bay must have been at that period very close to the lower layers of the wattling. Assuming that there has been no change in the sea level during this period of time, we have a subsidence of land at this point of 13 feet 11 $\frac{1}{4}$ inches since the Indians built the weir.

This estimate is based upon the "Charlestown Dry Dock Datum," a bronze plate set into the masonry foundations of the old dry dock at the Charlestown Navy Yard some eighty-two years ago, which indicated the mean low water of Boston Harbor at that time. Mr. John R. Freeman, a civil engineer of note, who was engaged by the Legislative Committee to report on the feasibility of constructing the Charles River Basin, found that this plate was about 9 inches beneath mean low water at the time of his investigation, or in other words that the plate was sinking at the rate of about one foot in a century.

Other interesting data are gradually coming to light bearing upon this subject.

If Mr. Freeman's observations are correct, and if the subsidence of the land has been fairly uniform, the weir must have been built about fourteen hundred years ago.

PEABODY MUSEUM,
HARVARD UNIVERSITY.

A PREHISTORIC EARTHWORK IN THE HAIDA INDIAN AREA

BY HARLAN I. SMITH

NEAR Rose Point, the most northeastern part of Graham Island of the Queen Charlotte Group, in the Haida Indian area of British Columbia, is an unusual prehistoric earthwork. Published accounts of earthworks in western North America are so rare that a note of this one may be useful. The information was collected during a brief visit made in 1919 for the Victoria Memorial Museum.

The exact location is about a mile and a half southward from the limit of trees on Rose Point. It is about a quarter of a mile east by north, on the trail from Mr. Bradley's ranch house to the east coast on a wooded flat among steep wooded moving dunes possibly thirty feet high. The site is probably a little northeast

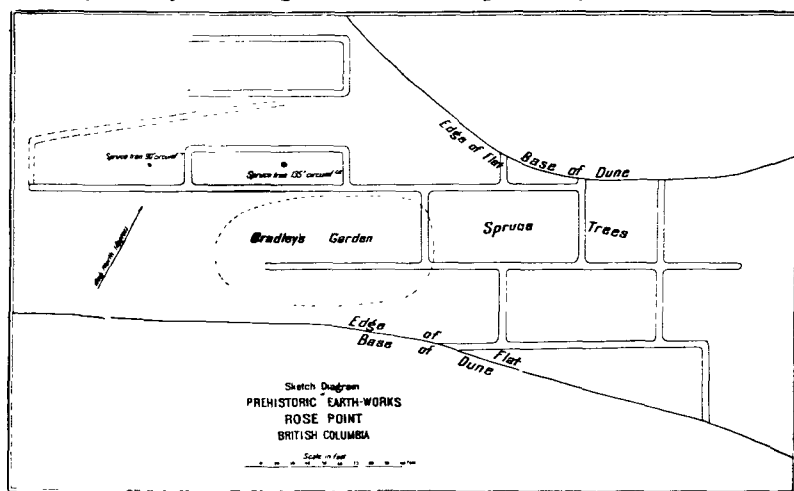


FIG. 1. A Prehistoric Earthwork in the Haida Indian Area.

of the center of lot 1014. The earthworks consist of ridges of earth about twelve to eighteen inches high outlining long rectangles as illustrated in Fig. 1. Two low ridges in the northwest part of the earthworks, one of them at an angle to the other ridges, may be the remains of decaying timber. These are represented by dotted

lines on the map. All of the complete rectangles are approximately one hundred feet long. Two complete rectangles and four parts are about fifty feet wide; one is about twenty-five feet wide, and another partial rectangle parallel to it at a distance of thirty-five feet, is thirty-five feet wide. All of the complete rectangles are longer easterly and westerly. It is surprising that lengths of these longitudinal ridges are equal, that they are an even hundred feet long, that the lengths of so many of the transverse ridges are equal, one rectangle being exactly half as wide as the others, and that the width of an incomplete rectangle is measurable in multiples of all of the other measurements.

Whether the dunes have covered part of the earthworks or whether the ridges merely abut on the dunes was not ascertained. If the dunes had been built out over part of the ridges it must have been long ago, as there are large spruce trees on them at this place. There are no large trees on the ridges, but there are large spruce trees growing within the earthworks as well as on the dunes, those northwest of the earthworks being the larger. A spruce tree ninety inches in circumference stands about twenty-five feet westward from the top of the westernmost north and south ridge, and nearly twenty-five feet northward from the top of the most western east and west ridge on a space that was possibly enclosed, although we could not trace its western or northern embankment. Another spruce tree one hundred thirty-five inches in circumference stands within the most western complete rectangle. This tree is, consequently, over forty-two inches in diameter and an average spruce three feet in diameter on Graham Island is said by foresters to be over one hundred seventy-five years old; it would seem, then, that the earthworks were probably made before 1744, that is, thirty years before the first European visit to the island. It is a possibility, however, that the tree was enclosed within the earthworks.

A spruce windfall to the northwest disclosed no village refuse, such as shell-heap material, among its roots or in the hole formed on its uprooting. The middle southern part of the earthworks is located in an oval space about a hundred fifty feet long which the Bradleys have fenced and cultivated as a garden. In this garden,

stones burned and crackled by fire were seen but no shells were found. Part of the skull of a whale was seen imbedded in the earth near an embankment in the southeastern part of these earthworks. On the whole, signs of habitation were so scarce as to suggest that the period of occupation, if any, was short.

If these ridges are the remains of banking around houses, the houses were not similar either in size or proportions to Haida houses. The Haida houses were nearly square while those of Nootka and Salish tribes, of the region much further to the south, were sometimes long and narrow. Although these enclosures are parallel and in parallel rows, as were the houses, there are no passageways between them except possibly in one place. This place is the thirty-three foot space lying between the area walled on three sides as traced at the north and the enclosure to the south. Here there seemed to have been no ridges. Moreover, the rectangles are not arranged along the base of the dunes or with any symmetrical relation to them as would probably have been the case with houses built since these dunes were formed. The site is well sheltered by the dunes and in that respect, although rather low, is desirable for habitations on this point where both wind and driving sand are severe.

Mr. Carpenter, of Masset townsite, suggested that these walls were made up of sods removed in the making of gardens. At the Haida village of Masset I saw a wall about six feet long by two feet wide by two feet high consisting of sods taken up in the making of a garden. However, a wall of these earthworks, the one under cultivation within the enclosure fenced by the Bradleys, is of yellowish gray sandy soil rather than of black humus such as would result from the decay of sods.

Although many localities in the Haida area are referred to as forts, it is not known whether they include earthworks or not. The earthworks of the coast of southern British Columbia tend to be circular or semicircular except in places where they cut off promontories which could easily be fortified. The Rose Point earthworks do not appear to be fortifications and their true purpose has not yet been explained.

BOOK REVIEWS

METHODS AND PRINCIPLES

Illustrierte Völkerkunde (in zwei Bänden). II: Zweiter Teil. Herausgegeben von Dr. GEORG BUSCHAN, Stuttgart: Strecker und Schroeder, 1926. XXIV, 1154 pp.; 42 pls., 708 ills., 6 maps.

This "second part of volume two" actually forms a third volume of Buschan's *Völkerkunde*. It is itself subdivided into four sections; the systematic treatment of the Indo-Germanic peoples of Europe (1-304) is by Professor Michael Haberlandt; the topical summary of European culture (305-658) and the description of Mediterranean North Africa and the Canaries (1023-1059) by Professor Arthur Haberlandt; and the discussion of the Caucasus, the Turkic peoples of Russia, and Finland (659-1022) has devolved upon Dr. Arthur Byhan. An impressive bibliography and an exhaustive index close the monumental work, which may veritably be described as indispensable for the student of ethnography and culture history. Even readers primarily interested in physical anthropology will find summary statements as to the anthropometry of living European populations. A special charm of this publication lies in the abundant illustrations, which in many instances compel comparison with the illiterate peoples of the globe. Thus, the Irish peat-basket dray (p. 230) recalls the travois of the Plains Indian; the weirs with fish-baskets from Hungary and elsewhere (p. 323) suggest many corresponding aboriginal devices; and while the ceremonial observances, such as the Tyrolese mummers (p. 196) and the Bavarian capercaillie dance (p. 624) have a generic resemblance to primitive usages, the headdresses from the Salzkammergut (plate XIV) have a definitely Melanesian tang.

Any anthropologist who has had the good fortune of being conducted through the Museum für Völkerkunde in Vienna or Nordiska Museet in Stockholm knows that in essence the European folk-ethnographer's task does not differ one whit from his own. Both are driven to range ethnographic detail in culture provinces, to trace historical connections, settle delicate problems of parallelism versus borrowing, to study the interaction of complex and ruder cultures. In so far as the European field is in part covered by written records,

the general anthropologist can often derive invaluable data from his colleague abroad as to what cultural processes may demonstrably be operative.

From the mass of suggestive material it is here only possible to glean a few special features for comment. One thing that must constantly impress the reader is the tenacity with which usages of hoary antiquity are preserved. That as late as the middle of the nineteenth century there were Norwegian peasants who made sacrifices to wooden human effigies (p. 169), to cite a single sample of religious survivals, is less astonishing than the persistence of economic and technological traits. Thus, a book published in Nuremberg in 1735 and 1758 contains many recipes for stupefying fish and even in recent times this practice, usually associated in our minds with, say the Andamans and the Amazon River, has been reported from Portugal, Hungary, the Balkans, and Sweden (p. 318 f.). Again, those who have forgotten their Tylor will learn with astonishment that stone-boiling is a widespread European practice (pp. 329, 443). Finally, eye-witnesses report fire-making in Croatia by a simple frictional method as late as the end of the nineteenth century,

Einfaches Aneinanderreiben zweier Hölzer . . . , wobei je ein Paar Männer abwechselnd zu der immerhin mühevollen Tätigkeit antrat (p. 380).

Important data for a history of the sweat-bath are provided by Dr. A. Haberlandt (pp. 438-442). He cites Herodotus' description of Scythian vapor baths, taken in tents covered with woollen blankets; also the Spartan practice of sweating in little booths. He suggests that the sudatory may be of great antiquity in Northern Europe, the Russian vapor bath being possibly a development, though not an immediate derivate, from the Scythian form.

All three authors must be congratulated on so successfully coping with a task of great magnitude, even though doubtless a labor of love and as such its own reward.

ROBERT H. LOWIE

Allgemeine Rassenkunde; als Einführung in das Studium der Menschenrassen. WALTER SCHEIDT. 585 pp., 144 text figs., 15 black pls., 5 colored plates; with an appendix: "Die Arbeitsweise der Rassenforschung" by Prof. Dr. E. WAHLE and Dr. W. SCHEIDT. J. F. Lehmann Munich 1925. (Unbound 30 m., bound 33 m.)

Dr. Scheidt's book is a welcome addition to the meagre store of general works dealing with human genetics. The treatment given to

race mixture is exhaustive. *Allgemeine Rassenkunde* opens with a rather full historical sketch of the history of physical anthropology from Linné to Deniker and Ripley. For the most part this section deals with the taxonomic aspect of man and includes an interesting list of the foremost figures in the science with their principal works. The remainder of the book is rich in detail and is concerned principally with an introduction to the mechanics of heredity which is well illustrated with examples from *Homo sapiens*. Unit and multiple factor characters, linkage and crossing over are dealt with at considerable length. Unfortunately this exposition will be slightly obscured for the average reader not too familiar with German, since the author is addicted to an over-involved and needlessly complicated jargon. Besides the purely genetic topics the book takes up various social and economic factors and selective agencies which are operating upon human populations. There is a section devoted to a discussion of the future of racially mixed groups. A valuable elementary treatment of statistical and graphic methods of analysing biometric data is given in an appendix. The bibliography is unusually rich and should prove of extreme value to all interested in the subject.

This book reveals the woefully neglected state of our knowledge regarding race hybridization. The great importance which the study of genetics has for physical anthropology has only recently been generally recognized. To a large extent our understanding of the racial significance of modern groups will depend upon the findings of studies of hybrid peoples. In the same sense that evolution proved to be a new and fruitful point of departure for biological sciences, so genetics presents the same possibilities. Although early investigations on hybrid groups were carried out by Davenport, Boas, and others, it was not until 1913 that Eugen Fischer published his classic and exhaustive work on the Rehobother Bastards, the first major study on this subject. Since then nothing as ambitious has appeared.

Dr. Scheidt is to be congratulated on having collated the information and great number of facts which he presents in his book. Its value will be apparent to all workers engaged in studies on human genetics.

However, there is one serious omission which the reviewer regrets in what is otherwise an admirable compendium. Since this book purports to be an introduction to the study of race, it would have been eminently fitting for a chapter dealing with the anatomical character of race to have been included.

H. L. SHAPIRO

The Races of Man and Their Distribution. A. C. HADDON. New York, MacMillan Company, 1925, 201 pp.

This welcome book should be carefully differentiated from the one of the same name published by the same author about fifteen years ago. It embodies parts of the earlier and smaller volume, but is fuller and much more firmly organized. In fact, the present volume is so much superior that the retention of the identical title seems regrettable. The introductory section on the Basis of Classification largely follows the old lines. The bulk of the book however is devoted to Distribution and Racial History according to Areas and has been thoroughly worked over. Summarized measurements are given for many peoples, whose distribution, historic relations, and racial affinities are also discussed. Migrational movements are examined with particular interest. The work concludes with a general summary and an interesting diagram (page 170) which, although evolved primarily for teaching purposes, compactly summarizes the author's views. The volume is valuable, and doubly so in the dearth of satisfactory books on the human races. It is to be hoped that the larger work, of which the author says this is to some extent a summary, may soon be available.

A. L. KROEBER

Rassenkunde Europas. HANS J. GÜNTHER. München: J. F. Lehmann 1926. 225 pp., 362 ill., 20 maps.

This book is printed in German type and is avowedly pro-Nordic. It is also pro-eugenic. It shows portraits of Gobineau, Chamberlain, Grant, and Stoddard. It contains a chapter on the psychic qualities of European races. The dominant qualities of the Nordic race are judgment, sincerity, and energy, culminating in leadership. The Mediterraneans are passionate and volatile; the Dinarics are characterized by rugged power and directness; Alpines are contemplative, inquisitive, and narrow-souled. The psyche of the East Baltic race is apparently more complex than that of the others. The book is, however, not without value; especially in its illustrations of types. These are well selected and in many cases appear to be new. Specific anthropometric facts are mostly condensed into maps, which seem reasonably accurate and useful. Most of the maps give the distribution of separate traits. The race map proper, on page 98, which takes in Western Asia and Northern Africa, has the merit of showing only

the areas of chief dominance of racial types, the transitional regions being left blank. At that, reflection on a summary presentation such as this work offers cannot but impress one with the fundamental subjectivity of use to which the objective data of Anthropometry are still being put in the discussion of racial types.

A. L. KROEBER

Les Origines de l'Humanité. RENÉ VERNEAU. F. Rieder: Paris, 1926. 80 pp. and 59 plates. 15 francs.

A simple, nicely illustrated description of fossil men and early implements for the layman. It seems that in France too there are anti-evolutionary sceptics. The book is devoid of novelty, but affirms a belief that Neandertal man is in the direct line of man's ancestry and has his descendants in southeastern Australia.

LESLIE SPIER

Evolution, Genetics and Eugenics. HORATIO HACKETT NEWMAN
The University of Chicago Press, Chicago, Ill. Pp. xx, 639;
99 text figs.

This is the second and revised edition of a work first printed in 1921, of which six impressions were made. It is intended primarily as a college textbook, but reference is also had to the demands of the general reader who will often find occasion to appeal to it for guidance in the stirring times to which the doctrine of evolution is committing us. It consists largely of classical papers by the earlier and the later evolutionary fathers, such as Darwin, Wallace, Romanes, Le Conte, De Vries, Morgan, Jordan, Kellogg, Osborn, Lull, Conklin, Thomson, to which have been added supplementary chapters by Professor Newman, and to him has also fallen the difficult task of weaving this material into a measurably consistent whole. In a work of this kind it is too much to expect that the orientation of the body of material would be wholly up to date. Even the casual reader can hardly fail to notice a jar between the quotation from Jennings' recent article on *Heredity and Environment* appended to Chapter XLII and the attitude assumed elsewhere in the volume. Again, few anthropologists would sympathize with the strictures upon our hybrid immigrant population on page 532. Naturally the same sort of consistency is not to be looked for in a work of this character as in one from a single pen, and that the contributors have not gotten together on the same platform is frequently evident

even where Professor Newman has not called attention to the fact. Thus Wiggam comments on the researches of Thorndike and his students as proving

how much more we can influence the moral character than we can develop the purely intellectual traits (p. 564), while Popenoe and Johnson tell us that only the capable and altruistic man . . . can contribute to social progress, and such a man can only be produced through eugenics (p. 582).

It should take no unusual erudition to perceive that the capable man is not necessarily the altruistic one, and if the one is bred the other is no certain by-product of the process. These points are, however, merely by way of indicating that the papers here collected are not to be taken as embodying *ex cathedra* utterances. Of the general utility of the total result there can be no question.

JOHN R. SWANTON

The Life, Letters and Labours of Francis Galton. Vol. II. KARL PEARSON. Cambridge, University Press, 1924.

An interval of ten years has elapsed between the publication of the first and the second volume of Pearson's *Life, Letters and Labours of Francis Galton*. This delay was due in part to the Great War, in part to the varied activities and responsibilities of the author, and in part to the financial difficulties involved in the issue of a work in keeping with the rather sumptuous style of the first volume. As the first volume of the biography met with few readers its sales failed to defray the cost of publication. Perhaps the second volume will be no more successful in this respect than the first. But Professor Pearson has not attempted to write for the book market. He has endeavored to present a full and accurate history of a man and his work as a sort of memorial to the founder of the Galton Laboratory of National Eugenics of which he is the director. There is to be a third volume in addition to the two bulky volumes already published. The whole work, whose completion it is hoped will involve no further long delays, will doubtless take a high rank among biographies, and will not improbably come to be valued much more highly by future readers than by the present generation.

Professor Pearson is perhaps the one man best qualified to write upon Galton's life and works. Few indeed are equipped to treat with adequate understanding and appreciation of Galton's varied activities as medical student, traveler, mathematician, meteorologist, psycholo-

gist, anthropologist, geneticist, eugenicist, and student of social science. No one can read the pages of this exhaustive biography without a growing appreciation of Galton's real greatness. Inheriting a sufficient fortune to render him independent, Galton was free to indulge his taste for science. Original, ingenious, with a bent for mathematics and statistics as well as for experiment, attracted by the general and philosophical aspects of scientific problems, Galton found in scientific research and generalization an absorbing pastime. He is sometimes accused of being an amateur. But versatile as he was, he was far from being a mere dabbler, since all the varied fields in which he worked were enriched by his ingenious discoveries and wise reflections.

Although occupied in the early part of his life with geography and meteorology, with occasional incursions into mathematics, physics and astronomy, Galton, as he matured, became primarily a student of man, and in later years he came to be more and more concerned with the improvement of human kind. To further the evolution of the human race became with him an object of religious devotion. In his last years his chief labors and finally his fortune were given to this cause.

Professor Pearson's *Life of Galton* is much more than an ordinary biography. It gives in addition to the details of Galton's life, a good résumé of his various books and numerous articles, a large amount of his correspondence, a description of his discoveries and inventions, and a discussion of the relation of Galton's productions to the circumstances under which they were produced. There are many quotations from Galton's writings accompanied by sufficient explanatory discussions to enable the reader to gain a clear conception of their contents. Few biographies can be read with more profit.

S. J. HOLMES

Die Trepanation. Studien über Ursprung, Zusammenhänge und kulturelle Zugehörigkeit der Trepanation. Dr. D. J. WÖLFEL.
(Reprinted from *Anthropos*, xx, 1925.)

The present (first) study has to do with "Die kulturellen Zusammenhänge und der einheitliche Ursprung der Trepanation in Melanesien und Amerika."

The interest in trepanation as a primitive type of surgery was first aroused when Squier brought back from Peru the trephined skull of the Zentino Collection (now in the American Museum of Natural

History) and when Broca announced the occurrence of stone-age examples in Europe. After a brief introduction, the author takes up in turn the operation in the South Seas and in America; this is followed by a summary of his conclusions and an exhaustive bibliography.

The results are based not only on a careful study of examples from the past but also on the living and on the testimony of those who have actually seen the operation as practised by primitive races. They lead inevitably to the conclusion that trepanation in the South Seas and in the New World is one and the same thing so far as culture is concerned. It is revealed as a purposeful method of treating certain troubles originating both from without and within, such as depressed fractures and mental disturbances.

The author believes there is an organic relation between the war club (of wood and of stone with wooden handle) and trepanation, that they go to make up a culture complex with a common origin which has spread until it covers parts of America as well as Melanesia.

The readers of *Anthropos* are to be congratulated on what Dr. Wölfel has already accomplished on their behalf and on the promise of further studies on the subject of trepanation from the same source.

GEORGE GRANT MACCURDY

ASIA AND AFRICA

Religion and Folklore of Northern India. WILLIAM CROOKE. Prepared for the press by R. E. ENTHOVEN. New York: Oxford University Press, American Branch, 1926. 471 pp. (\$7.00).

This new edition of the late Dr. Crooke's *Popular Religion and Folklore of Northern India* has been entirely rewritten to include the large amount of material accumulated since that classic appeared in 1896. It is especially welcome as the first edition is now out of print. The work now confines itself largely to Northern India, the Decan, and the Bombay Presidency, the field of its comparisons being materially retracted.

LESLIE SPIER

Process of Physical Growth Among the Chinese. Volume I: *The Chinese of Chekiang and Kiangsu.* Measured by Dr. V. APPLETON. S. M. SHIROKOGOROFF. Shanghai, Commercial Press, 1925, vi, 137 pp. (\$6.00 Chinese?)

This is a record of body measurements and various observations on nearly six hundred boys of mission schools in two eastern Chinese provinces. As in an earlier publication ("Growth of Chinese," *China Medical Journal*, 38, 1924) only averages with maxima and minima are given; no measures of variability and no seriations. Data on the average age of each age group are not given, the author assuming that seven-year old boys, e.g., are 7.5. years old, whereas in most school populations such boys would average nearer eight than seven.

Differences exist between the series from the two provinces. Kiangsu boys are taller, at least after the twelfth year. Comparisons with other groups, Chinese and Caucasian, are offered, but with no definitive findings. As I have stated with respect to the earlier series (this Journal, 1925, 27: 469-470), I cannot agree that the ages ten to twelve and fifteen to sixteen are critical points in the rate of stature growth, nor does it now appear that growth is completed at eighteen.

It is not clear that the discussion of the changes in the relative growth of parts of the body is worth the effort lavished on it. Data on the appearance of the teeth are given in such form as to be well-nigh useless. Various endocrine activities are posited as causes for the observed course of growth. On the whole, this is one of the most pretentious and ill-written publications in many a day.

LESLIE SPIER

Dix Années (1914-1923) dans le Bassin du Fleuve jaune et Autres Tributaires du Golfe du Pei tcheu ly. EMILE LICENT, S. J. 3 vols. text; 1 vol. tables; an atlas of 154 sheets. 1692 pp., 60 plates; about 300 fig. Published by La Librairie Française, Tientsin; printed by the Imprimerie de la Mission de Tcheli by S. E. Sien-Hsien 1924. 400 copies.

These volumes contain the results of an expedition, or rather of a series of expeditions, planned by Père Licent in 1910, approved and supported by the heads of the Jesuit order, and encouraged and aided by the representatives of the French government at Peking. We have here not a systematic scientific work in the ordinary understanding of the term, nor, on the other hand, a simple book of travel, but, in the words of its author,

the journal of a naturalist-traveler, whose sole ambition is to be as accurate and as conscientious as possible. It contains the facts noted in covering

about 30,000 kilometers of North China, notebook in hand, for the collection of materials in the following sciences: Geology, Mineralogy, Paleontology, Botany, Zoology, and Ethnology.

These materials are preserved in the Laboratory-Museum of Hoang ho-Pai ho, at Tientsin.

Père Licent reached China by the Trans-Siberian Railway at the end of March, 1914, and his journal proper concludes with the entry dated Feb. 14, 1923, but during the remainder of the latter year he labored in conjunction with Prof. Teilhard de Chardin, of the Catholic Institute of Paris, on the French Paleontological Mission in China. To the work of this expedition ten supplementary pages are devoted, and these contain some of the information most interesting to an anthropologist because they recount the location of Mousterian stations near the Great Wall of China, east of the Ala chan range.

This is one of those rare works, breathing the spirit of the old-fashioned "naturalist," which sometimes lead one to wonder whether, in the exuberance of specialization in our own day, we have not lost something which he possessed. Probably, in the better known regions of the West, work like the present would be unjustified, but on the geographical frontiers of science it is natural, indeed inevitable, that the investigator should revert to some extent to more primitive methods. Future specialists in this region will no doubt be glad to amplify their data by means of the material contained in Licent's work,—material on meteorology, geography, physiography, mineralogy, geology, paleontology, botany, zoology, archeology, ethnology. We discover that we are dealing with an observer of unlimited capacity, tireless energy, and dauntless determination, one who is interested in everything upon which his eye rests, least as well as greatest, wherever and whenever it presents itself. Thus he takes note of the destructive effect of Chinese methods of agriculture in the semi-arid country, of which methods he at the same time gives us a study. He investigates as well the mining processes of Pei Tai Ho and the fishes and tides of the Gulf of Pechihli. He describes a dust storm or the building of a Chinese house with equal facility. Disastrous floods at Tientsin are made the occasion for remarks on the causes of the same and the necessary steps to avoid their recurrence. We are told about Chinese methods of smelting iron, Chinese methods of feeding mules on long journeys, an interesting way of incubating chickens' eggs in the region north of Yung P'ing Fu, and about the breeding of horses and camels in Mongolia.

Licent paid a visit to the famous tree described by Abbé Huc the leaves of which (at least those within reach from the ground) are said to be inscribed with Tibetan characters, and to the Flower Festival in Koumboum where he was impressed by the extraordinary effect of the decorations, all in butter. Shortly after recovering from a slight attack of small-pox he is out after beetles and soon on the road again. In eastern Kansu his enthusiasm for fossil bones occasioned the alarming information to reach a sub-prefect that he had extracted and was holding in captivity a live dragon whose detention was interfering with the rainfall.

Ethnologists will be interested in what our author has to say of the San p'ouo ("the three slopes"), a quasi-independent territory south of Yang kia p'ing in Shansi, exempt to some extent from taxes and the jurisdiction of the sub-prefects, and governed by three old men. Foot deformation was not practiced upon their women.

Students of totemism will also like to hear of the "Hoei" or "Ta chou ti hia ti jenn" ("People who were born under the great Sophora"), scattered in various provinces of China, who believe that they originated in the neighborhood of a great Sophora, a scion of which is still in existence two or three lie north of Hong tong, near the village of Koan Tchoang, in Shansi. About it are ten pagodas, and after a visitor belonging to this group of people has made obeisance to the tree, he retires into that pagoda belonging to his province to drink tea.

There is included in the narrative a description by Rev. Père De Boeck of remains of an earlier culture in the upper bend of the Yellow River, which he visited in company with the Comte de Lesdain. This is identified with the Si hia (Tangut). The finds consisted of a town, irrigating canals, vaulted tombs made of brick, pottery, coins, arrow points, brick ovens, forges for iron and copper. From the left bank of the River Siao ling ho Brother Paul Meuris obtained fragments of pottery, coins, polished stone axes, bronze arrow points similar to those found by M. and Mme. Torii, and pieces of baked clay which had been used as weights for fish nets, indicating occupancy of the region at a period when the state of the river was wholly different. The coins were of varieties used between the beginning of the Christian era and 600 A. D. Near Boro-Balgassoun in the Ordos country, were found a number of mortuary urns, containing ashes, charcoal, and calcined bones; mortuary vases; and a chamber of brick made for the incineration of the dead. Some of these were arranged geometrically indicating family burials. Most of the coins

found associated with such burials belonged to the period of the Song Dynasty, and it was believed that the remains in general should also be attributed to the Tangut. During the two preceding years many objects of bronze belonging to the same culture had been collected from sepulchers near by, as they had been exposed from time to time by the winds. In the same region were obtained three polished bronze mirrors 172 mm. in diameter, ornamented with dragons on the back; a dagger; five knives; fibulas; pins; four awls; two small axes similar to iron adzes; some little vases and bells; many seals; arrow points; a needle-case; pearls; coins; two brass medals, the motif strikingly like the medals of St. George. Researches in the old town of Borobalgassoun gave evidence of its destruction by violence, which it is known to have suffered at the hands of Genghis Khan.

Licent's account of the paleontological mission is merely preliminary. Some Neolithic remains and fragments of skulls of little significance were found, but, as we have seen, the main interest centers about certain paleolithic remains belonging to the Mousterian epoch. Worked flints of Mousterian type were discovered at several different places, but in greatest abundance about Choei tong keou. During the inspection of the lacustrine deposits at that place a Mousterian hearth came to light from which, during a later visit, 450 kilograms of worked stones were removed. Four secondary hearths were found near by.

The arrangement of this publication is altogether unique. The text is accompanied by an atlas containing not merely a general map of the region explored but a series of charts paralleling the course of the explorer, each with half-tone reproductions of photographs taken along the route, the exact locations of which are indicated on the map. The number of each chart and its accompanying views is entered on the right-hand margin of the text so that it may be readily consulted, and on the left-hand margin is entered the date of exploration. The reader is thus furnished with a kind of scientific travelogue, in the course of which he is not merely told about the region visited but given views of it. In the supplementary volume is a table giving the stages of the journey, the page in the text where it is described and the sheet of the atlas illustrative of it; a table of illustrations, with the location of each in text and atlas; a concordance of atlas and text; an index; a reference table of personal names; a list of those Chinese sounds used most frequently in the composition of geographic names; a table of contents; errata and important additions.

Here is a product of marvelous industry and permanent value. It is unfortunate, though we may assume it to have been unavoidable, that such an inferior quality of paper was employed and that the binding is so poor. Owners of this journal will want to back their charts with cloth or heavy paper and have them solidly bound as soon as possible.

JOHN R. SWANTON

Pratiques des Harems Marocains. A.—R. DE LENS. Paris, 1925.

The alluring title is followed by an elegantly written Introduction on the medical practices in Morocco, and then by a compilation of old wives' remedies, *à la marocaine*, for ninety pages. This is a fair sample:

Remèdes pour embellir les yeux: Faire cuire du miel avec des pelures d'oignon, et verser chaud sur les yeux, qui deviendront plus brillants.

In the rather tedious conglomeration, however, a few tid-bits are to be gleaned, like the following:

Remède contre l'impuissance virile: L'homme devra prendre un mélange d'eau de rose, de sucre et d'amandes pilées, et, aussitôt après agir avec une ânesse comme avec une femme. Il ira se purifier au hammam et en sortira bien portant.

Not all of them are as prettily said as the "remède pour ravir la virginité de la nouvelle mariée que l'époux amène en sa maison:

Il faut qu'une femme, esclave, parente ou amie de la première épouse, introduise son doigt dans la chose de la mule qui transporte la mariée au logis nuptial, et revienne aussitôt enfoncer son doigt dans un citron, plein de poivre soudanais, que la co-épouse a soin de tenir dans sa main, derrière la porte de sa maison.

Jaime de Angulo

OCEANIA

Archeology of the Marquesas Islands. RALPH LINTON. (Bulletin 23, Bernice Pauahi Bishop Museum, 187 pp., 30 figs., 15 pls.) Honolulu, Hawaii, 1925.

Again Polynesia claims the attention and interest of anthropologists in this informative survey of Marquesan archeology. To those who are interested in the prehistory of Oceania, the recent tendency towards a more thorough, firsthand study of South Pacific provinces is indeed welcome. Linton's archæological report, crowding the heels of his important contribution to Marquesan material

culture (*Memoirs*, B. P. Bishop Museum, v. VIII, No. 5), constitutes a noteworthy addition to the published data extant. A perusal of the combined reports of Linton, Handy and Sullivan on the Marquesas inculcates in one a conviction that a similar amount of published data covering each of the other Polynesian provinces would directly result in the ironing out of a great many of the problem-wrinkles that have long confused Polynesian students.

The paper is divided into (1) a general discussion of the subject under treatment, which is largely devoted to stone construction, classified types of structures and petroglyphs; and (2) a detailed archaeological survey, arranged according to geographical distribution of features. The absence in the province of any stratified accumulations of culture refuse, due largely to such topographical features as steep valley walls and the absence of coastal plains, deprived the expedition of opportunity for excavation. This unfortunate condition of affairs rendered difficult the determining of any kind of culture stratification. Consequently the author's conclusions regarding the relative placing of features in a series according to time sequence, though rationally suggestive, are of necessity conservative.

The most important general conclusion resulting from the research is that no evidence was found of a foreign people preceding the cultural ancestors of the present native inhabitants. The position that

the wide use of rough stone construction in Polynesia makes it appear probable that the first settlers of the Marquesas brought with them some knowledge of the mason's art, but the high development of this art was due largely to local conditions

(p. 5), seems entirely tenable and parallels my own conclusions in regard to Tongan stone construction. The geographical distribution of structural traits and the author's concluding deductions therefrom are worthy of careful, unprejudiced examination.

There are again discernible certain peculiar parallelisms between culture traits of the ancient Marquesans and the Maori of New Zealand, a parallelism first emphasized in Linton's report on material culture; but the negative evidence should not be crowded out of mind. In this I do not mean to infer that the data do not support a contention of culture contact between the two groups, but that the contact need not have been a simple and direct one.

The author is to be congratulated on his inclusion of Oceanic comparisons as a final treatment of each subject division. Such com-

parison will be even more valuable when a thorough check of data recorded by unscientific enthusiasts shall have been completed. For example, Linton refers to the Samoan *Fale o le fe'e* as a structure worthy of comparison with other well-known Polynesian structures (pp. 16-17). I can testify from first-hand observation that there is not a single stone in *Fale o le fe'e* that can not be lifted, unassisted, by a man of normal strength, and not a single artificially dressed stone in the structure, if indeed the irregular circle of small, foundationless, naturally formed basaltic columns deserves the name "structure".

Again, Cook's description of a Tongan "temple" is treated as such (p. 42). As a matter of fact, Cook's "temple" was an ordinary *'angi*, used exclusively as a place of burial for members of the reigning *Tuitonga* dynasty. It is reasonably certain that such places were never used as places of worship, ceremonial activities, or any other purely religious function.

No possible blame can be attached to Linton for these errors. They are to be expected in any Oceanic exposition employing comparative data until the records of early explorers, missionaries, adventurers and other untrained investigators are taken to the field and subjected to a critical comparison with existing field facts.

Though relatively unimportant, certain comparative data ascribed to personal communications with me are incorrect. I have no recollection of making such statements and feel certain that I was misunderstood. But whether or not I actually supplied the data as given, they should be corrected here. Thus, I am quoted as saying that the corner slabs of most Tongan burial structures are cut in L-shape (p. 18). As a matter of fact this type of corner stone is a unique feature of a single Tongan *langi*. Again, I am made responsible for the statement that

the *langi* which stands earliest in the genealogical series is the best built, and that later structures show a steady decline in excellence

(p. 18). What I meant to say, or what I should have said, is that the available evidence in Tonga indicates a gradual local development of the stone *langi* from a simple earthen mound, followed by a gradual decline in later works to the original earthen form again.

The concluding archaeological survey is crammed full of undorned facts and carefully determined detail, the whole comprising a wealth of material for the student of comparative relationships

and an invaluable guide to future investigators in this particular field. It is to be hoped that visitors to these islands whose interests are other than scientific will not take advantage of this archæological atlas to further oft-demonstrated propensities for unscrupulous vandalism.

Throughout, the paper is characterized by the author's habitual bold attack of problems, but is happily tempered with a commendable degree of caution and wise restraint.

It is with a feeling of mingled exultation and relief that the anthropological student of Oceania realizes the lack of further need for depending largely on such sources as Melville's *Typee* and Gracia's *Lettres sur les Isles Marquesas* for required scientific information on the Marquesas, that this important group has been moved up the line to be associated with Hawaii, Samoa, New Zealand and other Polynesian provinces that have been anthropologically surveyed and so opened to a more exhaustive investigation.

W. C. MCKERN

AMERICA

Vom Roroima zum Orinoco. THEODOR KOCH-GRÜNBERG. Strecker und Schröder: Stuttgart, 1923. Band V. 27 pp., 180 plates, 1 map.

The fifth volume of this account of the peoples of the Rio Bronco-Orinoco region gives a series of nearly two hundred excellent photographic portraits. The majority are those of Taulipáng, Yekuaná (both Carib), and Schirianá (of independent stock). Two types are pointed out among the Yekuaná and the Arawak Guinaú, with whom they are mixed; one undersized with marked musculature, the other more slender and of finer type. The brief introduction gives the distribution of a dozen tribes in this area.

LESLIE SPIER

Indian Sign Language. WILLIAM TOMKINS. Published by the author at San Diego, California, 1926. 77 pp.

This is a convenient record of the Plains Indian sign language and so far as the reviewer is able to judge seems thoroughly authentic. It is arranged in dictionary form, beginning with the gestures for abandon, abroad, above, absent. There are four hundred illustrations on alternate pages facing the description of gestures in the alphabetic list. These pictures are simple, clear and intelligible.

There is appended a similar list of more than two hundred pictographic signs of the Sioux and Ojibwa. The work does not attempt historic or philosophic interpretation but is accurate, practical, and useful. It will be of definite service in supplementing Mallery and Clark, especially through its excellent pictorial visualization.

A. L. KROEBER

Archaeological Investigations in the Aleutian Islanns. WALDEMAR JOCHELSON.

The similarities which connect the Indians of the northwest coast of America and the northern Palae-Asiatics, or to use the term our author prefers, the Americanoid tribes of Siberia, have long since been noted. But as to the direction and amount of interchange anthropologists are divided. Boas, for example, has formulated "the theory that the so-called Palae-Asiatic tribes of Siberia must be considered as an off-shoot of the American race, which may have migrated back after the retreat of the Arctic glaciers," whereas Hrdlicka suggests that the Palae-Asiatic tribes "gave rise to the American Indian." Between the Americanoid tribes of Siberia and the Indians of America are found the Eskimo whose presence involves a second controversy. Did they come from Asia or America and was their advent recent or remote? More or less connected with all three of these groups are the modern Aleut. Hence an investigation of them appears likely to throw some light on the relations between the three; and an investigation of the archaeology of their habitat may help to clear up the migration questions. In the present work the author presents the results of his study of the ancient villa sites on the Aleutian peninsula with this end in view.

Dr. Jochelson has a splendid background for the work, having studied the natives of Siberia, Kamchatka and the North Pacific for nineteen years. The data for his present work were acquired during the Jesup North Pacific Expedition of the American Museum of Natural History and, more particularly, during the years 1909-10 as the leader of the Anthropological Division of the Aleut-Kamchatka Expedition of the Imperial Russian Geographical Society.

An idea of the physical difficulties of the work undertaken may be had from the fact that he left Seattle December 8, 1908 but did not arrive at Attu, where he first excavated, until June 5, 1909 although he proceeded as quickly as possible and had the assistance of the U. S. Revenue Cutter Service.

The general location of the seventy mountainous, volcanic islands which form an arc over 800 miles long in the North Pacific are well known. The climate is perhaps more frequently misconceived; for the temperature is not excessively low. For the year Dr. Jochelson observed, the maximum was 16.5 °C, and the minimum -13°C. But the constant fogs and winds make the cold very disagreeable to man. In fifteen months only nine clear days were observed.

Dr. Jochelson began on the westernmost inhabited island, Attu. Four other islands were also worked on, Atka, Amaknax, Uknadax, and Unak near Unalaska. The excavations were made within a period of forty-seven days, only eight of which were not rainy and stormy. During this time he examined six caves, and excavated in fifty-seven pits, moving over a million and a half cubic feet of soil. In all thirteen apparently ancient sites were examined. These sites were characteristically on an isthmus or promontory and never in a river valley as is generally the case with modern Aleut villages. (Dr. Jochelson's criteria for determining whether or not a site was ancient are not clear. He appears to have depended largely upon the word of his Aleut workmen and in at least one case a site which both he and the Aleut deemed old yielded post-Russian material. See Tanaxtaxax site, pages 39 and 52). Each site consisted of several depressions more or less filled with kitchen-midden refuse and organic decay which marked the location of subterranean dwellings. Dr. Jochelson states that the shallower the depression, the older the pit since more fill marks the passage of more time. One would conclude from this that the original surface of the ground had not changed and that pits were frequently as deep as five meters when in use since that thickness of intruded material was sometimes removed in the course of the excavations. This seems pretty deep for half-underground dwellings (p. 115), and the determination of even comparative age by fill seems open to question. The largest site contained about fifteen house-pits although there is no evidence that all these were used contemporaneously. In fact our author thinks that two or three houses constituted the usual settlement. The pits averaged about 8.5 by 5.5 meters although some were as large as 29.9 by 10.7 meters. One site included three very large pits or kashims which the present Aleut assert were brought in by the Eskimo (presumably comparatively recently). The depth of the kitchen-midden deposit in the pits ran from 1.5 to 6.5 meters thick. Many cross sections of this rubbish with characteristic contents noted are given by Dr. Jochelson. In all

this work of observing, excavating and recording one is impressed by the care, system and scientific method used.

No evidence was found of disposal of the dead either by cremation or by exposure, as is the case in both Siberia and northwestern America. Neither were burials found in the lowest layers. This absence Dr. Dall attributes to cannibalism and Dr. Jochelson to burials in caves or small houses above ground which have not preserved the evidence. Later several methods of disposal of the dead were practised: (1) Important personages were embalmed or mummified and suspended in large caves; (2) common people were placed in small caves; (3) burials were made in small pits with perhaps several bodies to one pit; (4) bodies were laid on general refuse in some portion of the house-pit and covered over, i. e. they were not placed in dug pits. In all but one case (deemed a Russian) the bodies were flexed, and they usually appear to have been placed in a sitting position.

In discussing disposal of the dead our author presents so much information relative to post-Russian Aleut methods that it is very difficult to determine just which of his conclusions are based on archaeological evidence. If we summarize, as we do below, the skeletons of which he seems to have found evidence so as to emphasize their total number and their distribution, we seem to see possibilities of which Dr. Jochelson takes no account.

<i>Where found</i>	SKELETONS FOR WHICH EVIDENCE		
	<i>In caves</i>	<i>In small pits</i>	<i>In large pits</i>
Attu Island	0	9	0
Atka Island	28 (caves)	0	0
Anaknax Island	16 (1 cave)	0	3
Uknadax Island	0	0	0
Unnak Island	0	10	7

Do small pit burials exclude cave burials? Why are the cave burials considered ancient? In one cave 1.4 meters of refuse were below the skeletal evidence. Dall interpreted this as indicating the prior use of caves as living sites; but Dr. Jochelson thinks the users of the sites reached the islands with their culture set, and that the caves were simply temporary shelters. 1.4m is a pretty fair accumulation for a temporary shelter. The different burial methods on different islands do not seem to indicate great rigidity in culture. Finally, the small total of skeletons found rather suggests that the principal burial methods are not disclosed archaeologically, or else that the sites are not old enough to have accumulated many bodies.

Material culture. In the third of his paper devoted directly to this topic, Dr. Jochelson presents a series of excellent plates and text-figures which presumably illustrate all the types of articles he found. Each artifact is given an English name, the Aleut name is added in many cases, and its use is clearly and completely described. Consequently there is furnished an excellent guide for the determination of the character and use of primitive artifacts found in the future or in other parts of the world. Of this feature of his work and its suggestiveness we cannot speak too highly. Yet it seems that the author should have gone further; for, as it stands, we have an illuminating ethnological discussion of the material culture of the present day Aleut, and a commentary by the Aleut workmen on the archaeological material uncovered, but we are without a schematic or statistical presentation of that material. Since the pits of a site are supposed to be of different ages, what differences in artifacts do they show? What characteristic differences, if any, do the various vertical layers yield? Are there any differences between the islands? Nor can we readily compare the archaeological material with other areas, and we remain with some misgivings as to the wisdom of identifying the ancient remains with present practices. Dr. Jochelson points out several cases where the present Aleut are obviously poor guides (the ignorance of the Attu and Atka islanders of fish hooks, for example) which emphasizes the danger of tracing the affiliations of the previous inhabitants of the islands through the ideas of the present residents no matter how closely they may, *a priori*, seem to be allied.

Stone and bone articles were practically all that were recovered. The absence of shell is particularly noteworthy since raw material was abundant and shell articles would have been preserved.

Andesite was the stone most used. No flint was found, nor was there any soapstone which is so widely used by the Eskimo. The artifact was the lamp. These were far from primitive, were made in various shapes and in both the large and small types. The characteristic Eskimo features, crescentic shape and bridge for wick, were not noted. Stone points (leaf shaped and tanged points) for harpoons and lances were relatively plentiful. Chipped and ground stone knives, adzes, scrapers and hammerstones were well represented. Whetstones, sinkers, paint grinders, drill heads, frying-pans were comparatively scarce. In all over 1000 stone artifacts were recovered.

The great majority of the bone articles were parts of harpoons, lances or darts. Other bone articles were lamps, knives, wedges,

scrapers, awls, needles, fish-hooks, clubs, flakers, spoons, chisels, and mouthpieces of floats. The total number of pieces or the relative abundance of the different types is not given. It would be interesting to know from what depth the spoon of reindeer antler came. The bone objects illustrated in figs. 23, 24, plate 26 suggest the California charmstones, while the "back scratcher" (text-fig. 61) and the "comb" (text-fig. 63) are very similar to the articles which Californian Indians have described as fleshers.

A number of stone and of bone labrets and ear ornaments were found. Those of stone are particularly interesting since they are all made of marble, a material not found on the islands.

A large proportion of the bone artifacts were ornamented although Dr. Jochelson makes a very illuminating distinction between property marks, scratches to prevent slipping, cuts to prevent warping and ornamentation proper. As to the type of ornamentation the author is confusing, for on p. 93 he states that "on no one of the bone objects obtained from the excavations were traces of realistic patterns found," and on pp. 95-6 he describes and illustrates the "carved human face found on many fragments of the bone sections of casting weapons." On p. 99 he illustrates the carved head of a sea-lion.

Conclusion. Prior to Dr. Jochelson the only serious archaeological work done in this region was that of Dr. Dall. Dr. Jochelson interprets Dr. Dall as distinguishing three cultural periods: (1) The Littoral period (sea-urchin layer), which was extremely primitive without houses, clothing, fire, weapons, etc; (2) the Fishing period (fish-bone layer) representing the wave of immigration of a fishing people from America, when very few artifacts were possessed; (3) the Hunting period (mammalian-bone layer), which increased in complexity from the barrenness of the fishing period to practically modern Aleut conditions. From a reexamination of Dall's own data, from general cultural considerations, and by the application of his own comparatively evenly (vertically) distributed archaeological material, Dr. Jochelson refutes this entire theory in a convincing manner. He then concludes that the

Aleut came to the islands with a comparatively high primitive culture, not far removed from that found by the Russian invaders.

More particularly, our author decides that the age of the sites cannot be determined. They belong to the recent geological period since only animals belonging to species still living are represented. Yet from the depths of the refuse deposits, the decay of such materials

as whalebone, the great total volume of accumulation from a probably small current population he adduces for the sites a very respectable antiquity. The cultural horizon is essentially the same throughout, and the cultural level displayed is an incompletely developed neolithic one.

In applying these conclusions to the problem with which he started Dr. Jochelson is not clear. His citation of a number of conflicting authorities on the question of where the Aleut came from is confusing. For example, on p. 113 he asks if there was a

junction of the two continents still in existence in the Pleistocene Period, then gives certain evidence and concludes on p. 115 that there was not and that therefore the

Aleuts could not have come to the islands from the West.

But on p. 6 he has already stated that

geological and palaeontological data show that Alaska and Siberia were connected—even towards the end of the Pleistocene—.

At any rate none of this is archaeological, hence we must omit, as aside from the present point, the wealth of ethnological data which he cites to show the affiliation he believes to exist between the Eskimo and the Aleut of today. His archaeological comparisons are too meager. Similarities are shown with the Eskimo in the possession of the large woman's slate tailoring-knife, in the ornamentation with geometric designs (?), in residence in "half-underground" dwellings (note some pits were 6.5 meters deep), and in the use of the harpoon, lance, and stone lamp. Differences are noted in the features of the lamps, the bow and pots. Data relative to cephalic indices are given, but do not seem to point convincingly in any direction as far as surrounding areas are concerned. The joint possession of the labret is a peculiarly strong connection between the ancient islanders and the northwest Indians. No comparison is made between the Aleutian material and archaeological or present material culture of the tribes of northeast Siberia, which Dr. Jochelson was so eminently qualified to present. In short, we are left without a systematic comparison or a definite conclusion concerning the connections of the ancient inhabitants of the Aleutian islands and the three groups involved in the original problem.

The Bibliography and Index are very complete. So are the Aleut Glossary and the ethnographic map although these were perhaps not strictly required. The plates would be improved by the insertion of a

convenient scale.. In places the arrangement of the text is very confusing, notably pp. 90-94. Several small errors appear which should have been caught in the proof-reading. For example, on p. 12 two different dates are given for the time of arrival at Seward; and fig. 1, pl. 18, is called a "stone sinker" on p. 28 (line 18) and a stone lamp in the description of the plate itself.

W. EGBERT SCHENCK

The Mascoutens or Prairie Potawatomi Indians; Part 1: Social life and ceremonies. ALANSON SKINNER. (Bulletin of the Public Museum of the City of Milwaukee, vol. 6, pp. 1-260, 1924).¹

It is perhaps fitting that this production should be reviewed by one who has been among the Prairie Potawatomi of Mayetta, Kansas and also of Arpin, Wisconsin.—As Skinner notes (p. 13) the Prairie Potawatomi are unwilling informants: so we may congratulate ourselves that so much of their ethnology has been recorded. I am glad to say that wherever the data collected by Skinner and myself are at all comparable they agree pretty well, e. g., on the seasons and months. On the other hand, our data are often supplementary. Thus Skinner worked out the phratries, which I did not; while I have much information on localizations of gentes in festivals and the paints appropriate to different gentes, which is lacking in Skinner's published data. In the same way I secured a fairly representative body of folk-lore and mythology lacking in Skinner's material; on the other hand, he obtained the chants of the gentes, which I did not.

A few specific remarks may not be out of place. On p. 19 Skinner says native testimony does not agree as to whether the tribal chieftainship was hereditary in the Fish clan [gens] or Bear clan [gens], but notes that the preponderance of evidence favors the former. My field notes ignore the former entirely in this connection and mention only the latter. The argument from Sauk sociology is indecisive, for the chieftainship among the Fox was in the Bear gens. That the chieftainship was in the Fish gens of the Kickapoo, as is stated by Skinner, is opposed to my information as regards the Mexican Kickapoo of Oklahoma; and a Fish gens is not in the lists of Kickapoo gentes by the late William Jones. The orthography of the Potawatomi words cited is very inadequate. Much more serious

¹ Printed with permission of the Smithsonian Institution.

than this is the matter of the chants. A few chants are given in text with English translations, while the remainder are given in English only. I am personally acquainted with Sam Bosley, Skinner's chief and nearly exclusive informant and interpreter, and agree with Skinner that he has a most excellent command of English. However, he is a very poor dictator of texts. Words are given frequently with wrong divisions in the text of the Chants and Dance Songs. Often what is given as a single word should be divided. Again, though, Bosley speaks good English, he is not an accurate interpreter. Word after word in the Indian text is omitted in translation; even whole sentences have no English correspondents; and there are whole sentences in the supposed translations which have no Indian equivalents. These statements are made on the basis of a grammatical analysis by myself. Therefore it is abundantly clear that the chants which can not be controlled by the Indian originals can be used for comparative purposes only with the utmost caution. On the other hand, the English paraphrases will be of assistance to any one who undertakes to obtain the Indian originals. In closing I would point out that Skinner does not correlate what is known about Potawatomi ethnology from printed sources with his own, with the result that a future investigation is needed to clear up a number of points: also certain kinship terms (see p. 36) need to be defined more accurately.

TRUMAN MICHELSON

Observations on the Ethnology of the Sauk Indians. Part II. War Customs. A. SKINNER. (Bulletin of the Public Museum of the City of Milwaukee, vol. 5, No. 2, pp. 59-95, Plates 2-12. Milwaukee 1925).

In this paper Skinner gives us a series of very interesting observations on the war customs of the Sauk Indians which for the most part are quite novel and are presented in attractive form. First we have an outline of Sauk history (which is not quite accurate in one or two respects), then notes on the sacred bundles, war parties, prisoners, war honors, etc. It may be noted that he incorporates or paraphrases Galland's writings, to which I have repeatedly called attention; see the *Journal of the Washington Academy of Sciences*, ix. 595; *Current Anthropological Literature*, 2:234, 235; *Am. Anthropologist*, N. S., 17:576; *ibidem*, 26:96. There is no attempt to criticise these, and to correlate the statements made on the social organization with Skinner's own previously published data, which is a pity. If Skinner

thinks that Galland's Mam-ish-aum-uk is Mämishiwük (MA-mī-'ci'Ag^{ki} in my transcription) "attendants," he is in error: it doubtless stands for a word closely allied to this, mämī-'camawag^{ka} "the one whom I serve as ceremonial attendant." Galland's Mam-ish-aum-uk is doubtless colored by his mish-aum (mī'cām^{mie}) "sacred pack," with which it has no connection. If Skinner merely means that Galland's word is inappropriate, he is quite right. It may be observed that Galland's Monato-kush-a is corrupt: the Sauk word is Ke'cemanetōwa,—which Skinner does not note. Correct Monato-kusk-a on p. 77 to Monato-kush-a. Galland's O-ke-mau-uk-a "chieftains" is ugimāwag^{kie}; Us-kaup-a "servant(s)" [more properly, "ceremonial runner"] is A'ckāpāwa; Wis-uk-a is Wī'sa'kā'A, Nah-me-pa-she is Nāmipe'ciwa, etc. Skinner's statement that Sauk beliefs have disintegrated greatly in the past century (p. 81) is not quite true. Doubtless many ceremonies have ceased to be practised but there are still plenty of Sauk who have a full knowledge of them. The attempt to reconstruct the culture hero cycle in its pristine form is not convincing. Skinner follows Brinton, *Myths of the New World*, 194, and Hoffmann, *14th Ann. R. B. A. E.*, 162 as cited by Boas, *Traditions of the Thompson River Indians*, 101, in considering the coarse vulgar tales appurtenant to the Culture Hero among the Central Algonkians as later additions and degenerations: against which see Boas, *loc. cit.*, 4 et seq., *J. A. F.* 1914, 395; Lowie *Primitive Religion*, 371. The philological proofs which Skinner, and Brinton before him, gives as justification for his position in reality are no proofs at all. It is utterly impossible to etymologize correctly Wēnabūzū, Nānabus Mä'napus just as it is in the case of Fox Īyāpā'tā'A, Fox Aiyāpā'tā'A, Mexican Kickapoo Pā'pā'tā'A, Ojibwa Nānāpādam (see the *40th Ann. Rep. B. A. E.*, 376); and all attempts to do so thus far simply defy the known laws of Central Algonquian phonology. That some of the tales occur among some Siouan tribes in the Rabbit cycle is no support for the proposed etymology, for they also occur in other tribes in an entirely different setting.¹ An exhaustive comparative study alone can point to the sources of which the culture hero myth of the Central Algonquians is composed, and we might get some insight regarding the chronology. The extraordinary likeness in detail of this myth, including even some trickster elements, points rather to recent dissemination as a unit.

¹ Nor would such etymologizing account for the name of the culture hero among the Sauk, Fox, Kickapoo, Prairie Potawatomi, Peoria, and Cree.

But what a theoretical discussion of the myth has to do with war customs of the Sauk Indians, is not for me to say.—Skinner complains, 86, that there is practically no Fox material available for comparative study of the sacred packs. The difficulty is that he does not know what material is available nor where it is deposited. Years ago I gave a list of institutions in which Fox ethnological specimens are to be found, but Skinner apparently has never seen it.—The analysis of twenty-five Sauk war bundles is well-done; and the accompanying plates are really remarkably fine.

TRUMAN MICHELSON

Observations on the Ethnology of the Sauk Indians. Part III. Notes on Material Culture. A. SKINNER. (Bulletin of the Public Museum of the City of Milwaukee, vol. 5, No. 3, pp. 119–180, Plates 13–26. Milwaukee 1925. ')

In this paper Skinner gives a very good account of the material culture of the Sauk, and embodies some miscellaneous data. There are a few points that call for adverse criticism. On page 123 we are told that Meskwaki (Fox) collections are to be found in the Field Museum, the American Museum of Natural History, and especially in the private collection of Mr. Milford G. Chandler of Chicago (which, by the way, has since been practically entirely transferred to the Museum of the American Indian). As I have intimated before, Skinner does not know the institutions in which Fox ethnological specimens are to be found, so I give a list of them: American Museum of Natural History, Cambridge University Museum of Archeology and Ethnology, Chicago Historical Society, Davenport Academy of Sciences, Field Museum of Natural History, Historical Department of Iowa, Museum für Völkerkunde (Berlin), Museum of the American Indian, Public Museum of the City of Milwaukee, State Historical Society of Iowa, United States National Museum. Sauk words for articles of *native* manufacture, etc. are given; and an ethnozoology. Since a totally inadequate scheme of Sauk phonetics is employed, these words serve no scientific purpose and simply serve to increase the cost of printing. Such atrocities as wajina'kwāk (p. 125; wä^dtcināwa e'kwäg^{kic}) "noon," skua'tām (ibidem; A'ckwātām^{mic}) "door" manotāo p'āniāk (p. 138; nenōtāwipenyag^{kic}) "Indian potato" (plural, not singular as Skinner has it), muko-pāniāk (p. 138; ma'kwipenyäg^{kic}) "bean-potato" (sic: "bear-potatoes")

Shegák (p. 145; cegäg^{kwa}) "Skunk" to cite only a few examples—are ample proof of the above assertion. It remains to be said that the plates at the end are unusually fine, and that Skinner has laid us under deep obligations for reproducing ethnological specimens in such elegant style.

TRUMAN MICHELSON

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DISCUSSION AND CORRESPONDENCE

PREHISTORIC STATIONS IN THE IVORY COAST FRENCH WEST AFRICA

Editor's Note. The following communication has been kindly translated and transmitted by Professor David P. Barrows of the University of California, who writes us as follows:

In the winter of 1924, I crossed the French Sudan from Timbuctu to the Gulf of Guinea, and at the commencement of the tropical forest in the Ivory Coast I was hospitably entertained by Monsieur M. Alfred Cazalas, Commandant of the subdivision of the Ouillé. My memories of this reception are indelible by reason both of the kindness received and the further fact that after having been some two months quite without news of the outside world, I had opportunity to learn from my hosts (by reason of the opportune arrival of their mail), what had taken place in Europe, Asia, and America. Acquaintance so pleasantly made in this manner has continued through the kind correspondence of M. Cazalas, who has taken occasion to send me a number of very interesting prehistoric implements of the stone age, together with a brief study by him of prehistoric stations on the Ivory Coast.

With his permission this memorandum is here translated and offered for publication in the belief that it contributes in a valuable manner to the very imperfect scientific knowledge of Neolithic man in this part of Africa. The drawings here produced are taken from outline sketches made by Cazalas and seven polished stone implements, which he was so good as to send with his article, having been photographed for reproduction as well.

In the extent of the Ivory Coast I have had occasion to traverse I have discovered numerous Neolithic stations. In the Athé country in the great tropical forest, I have found two stations of which one, near the river Mé (?) is very important. A legend has evolved among the natives of this region on this subject. The Athé say that the wrath of the gods destroyed the village on the site of this station and that all the inhabitants, as well as their objects and utensils, pestles, mortars, etc., were changed into stones of different forms. What makes it easier for these rumors to be believed by the natives is that the site is composed of stones having bizarre forms. Some are cylindrical, others round, oval, flat etc. Numerous bowls from 10 to 35 cm in diameter or oblong of different dimensions have been hollowed in the laterite abundantly.

In the north of the colony in the Baoulé country the discovered Neolithic stations number 20. Certain of these stations are particularly important for the number of "bowls" cut in the laterite

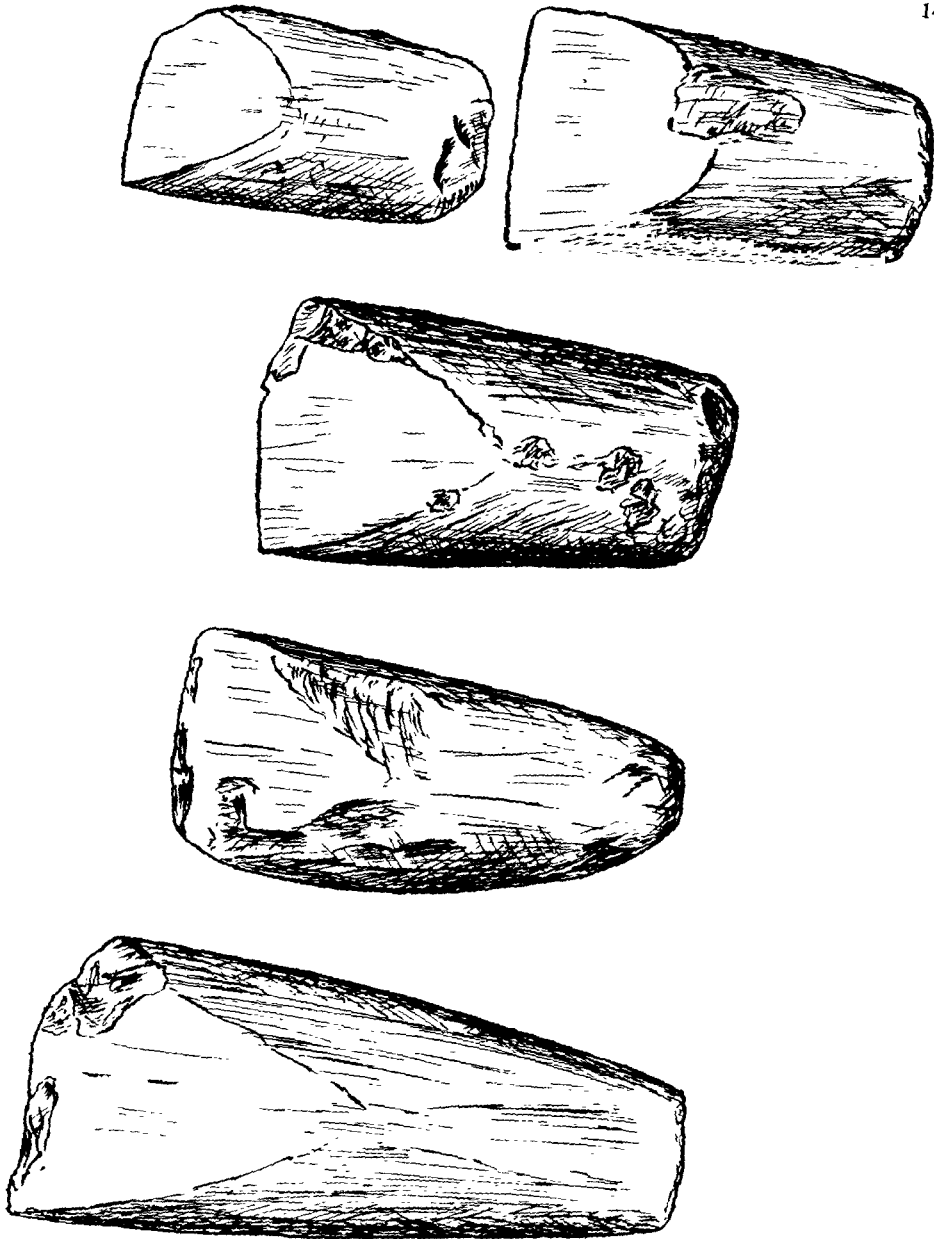


FIGURE 1. Stone Implements from the Ivory Coast

mass, which traverses the plateaus in which they are found. One especially should be noted where may be counted not less than 400 bowls, 30 of them oblong with numerous furrows. Certain bowls from 60 cm to a meter diameter have depths of 40, 50, 60 cm. Two stations around the more important have been especially studied and excavated; one situated on a laterite plateau 200 x 350 meters presents in the laterite mass a basin 8 x 11 meters, with $1\frac{1}{2}$ meters depth. In this basin there flow, either by infiltration or by flooding, rain waters which trickle here a great part of the year. The primitive inhabitants were certainly attracted there by the presence of water. Upon the banks of this basin are cut round bowls from 5 to 10 cm in diameter.

In the midst of this basin the people of the village situated at the foot of the plateau, who come to the basin to draw the water for their needs, had selected a little pyramid of stones, among which are some polished stones, (*perçoirs*) piercers, and "*coups de poings*" of different forms and sizes presenting all the characters of the Neolithic. One will find further on drawings of the stones found in this basin. A second station, situated on the boundary of the great tropical forest and the Sudanese savannah, presents 110 round bowls, 30 oblong and some 20 grooves of different dimensions. Finally on the laterite soil, where these bowls and grooves occur has been noted a circular furrow, forming an irregular circle from 60 to 90 cm, in the middle of which are three little circles 2 to 3 cm in diameter.

The most important of these stations is situated 20 kilometers to the N. E. of the preceding, also on a laterite plateau; it presents, I should say, more than 400 round and numerous oblong bowls, as well as grooves from 10 to 12 meters long, (cut of oblong bowls of different dimensions).

Outside of these stations, where bowls and grooves are found in the rock or laterite forming the soil, there are also found transportable polished implements, identical with the polished implements of Robenhausen type. Certain of these are of sandstone, others of granite. There will be found below a sketch of two of these polished stones.

Important quantities of polished stones, pinchers (*pinceurs*), hatchets, piercers, coups de poing, have been found either in the forest or in the savannah. Some of the hatchets weigh as much as a kilo and are 30 cm in length. A stone in the form of a knife

has 30 cm length and 5 cm breadth and 1 cm thickness. A very curious hatchet like a fireman's axe is of hatchet form at one end and pointed at the other (see below drawing of the most curious stones). For the natives, whatever be their tribe, Athé, Baoulé, or Ague, these stones fell from Heaven as thunderbolts. These are the things, they say, which cleave the trees upon which strikes the fire of Heaven, according to their expression.

ALFERD CAZALAS

ANTHROPOLOGICAL NOTES

ARCHAEOLOGICAL RUINS, called "Macanxoc", have been found in Yucatan by E. S. Thompson and J. Charlot of the Carnegie Institute. Inscriptions on stelae are reported that date from 364 to 413 A.D. From the style, sculpture, and dates of the inscriptions it is supposed that Macanxoc is the oldest center of Maya civilization thus far known in Yucatan.—*Science*

THE FIELD MUSEUM-OXFORD UNIVERSITY joint expedition is continuing its archaeological research in Mesopotamia under the leadership of Professor Stephen Langdon. Plans call for extending the work to include a town now known as Bughatait, 16 miles from Kish. Many rare finds have been made at the latter place. Plans also call for excavating the great temple of the mother goddess of Kish, situated in the eastern part of the city.—*Science*.

THE MUSEUM OF THE AMERICAN INDIAN, Heye Foundation, has completed plans for the immediate erection of the first unit of an additional building on the site, near Pelham Bay Park, presented to the institution in 1924 by Archer M. Huntington. It is planned eventually to develop the entire six-acre plot with buildings to form a triangle about a typical Indian garden planted with vegetables cultivated by the American aborigines.—*Museum News*.

PORTIONS OF A SKULL including the frontal bone, of a Neanderthal type, have been discovered at Devil's Tower, Gibraltar, by Daisy E. Garrod, of Oxford University. This discovery is of particular interest because of the former discovery of a Neanderthal type of man at Gibraltar in 1848.—*Science*.

A NEW ILLUSTRATED QUARTERLY on German folk ethnography entitled "Volk und Rasse" has appeared under the editorship of Dr. Walter Scheidt (Samburg), published by J. F. Lehmann Co., Munich. The price is 8 marks per year, 4 marks per quarter.

The life of early California Indians in a particular habitat has been studied recently by F. B. Kniffen of the Geography Department of the University of California. Mr. Kniffen worked among the Pitt River Indians. He found that these hunting and gathering peoples had well limited subsistence areas which were of three kinds: a dwelling area in which they lived because of convenient location

near dependable sources of food, a secondary area through which they strayed according to the seasons, and a subordinate area claimed by the tribe and defended against others, but infrequently visited. The border lines were strictly observed and trespass was punishable by death.

THREE ALBUMS entitled "Pre-Columbian Antiquities", the material for which is taken from the American Antiquities held in Belgium at the "Royal Cinquantenaire Museum" and from the celebrated Collection of Copenhagen, are being prepared for publication in Belgium. These albums, which are being published by Mr. Ph. Moens, 58, rue Veydt, Brussels, Belgium, will be issued only to subscribers at a price of 70 dollars.

According to Dr. Clark Wissler of the American Museum of Natural History who made a recent visit to Australia, delicate blood tests given to the natives of Australia show that their blood is closely similar to that of Caucasians. The tests were carried on by Dr. J. B. Cleland of the University of Adelaide.

Dr. Wissler considers the Australian aborigines to be highly intelligent people whose development has been arrested by adverse environmental conditions. The effect of civilization has been extremely deleterious to the natives, but a new department has been opened at the University of Sidney for the double purpose of training men for government service in caring for the natives and for research work in anthropology.

DR. ALFRED L. KROEBER, of the University of California, has been authorized by special decree of the government to work with scientific men of Peru in archaeological explorations of the Inca regions. Archaeological specimens will be distributed by the government between Americans and Peruvians in spite of a previous decree forbidding exportation of archaeological specimens.—*Science*.

The degree of doctor of letters has been conferred by the University of Nebraska on Mr. Francis La Flesche in recognition of his work in ethnology and his services to the state.—*Science*.

DR. RALPH LINTON, assistant curator of Oceanic and Malayan ethnology, is exploring the island of Madagascar and making an ethnological survey, securing collections illustrative of the life and customs of the tribesmen.—*Science*.

DR. ALEŠ HRDLÍČKA, of the U. S. National Museum, has returned from a summer in the field spent in making an archaeological survey of

Alaska in which he covered the major portion of the Yukon basin and of the coast from St. Michael and Nome to Barrow, north of the Arctic Circle. The expedition was under the auspices of the Bureau of American Ethnology, Smithsonian Institution, and its main object was to throw further light on the probable route by which primitive man first set foot on the American continent.—*Science*.

DR. E. FISCHER, professor of anatomy at the University of Freiburg, has been appointed director of the institute for anthropological research now being organized at Dahlen.—*Science*.

DR. WALTER FEWKES, who has spent the summer in Arizona in the excavation of the Elden Pueblo ruin, expects to return to Washington during the first part of the month. As a result of his excavations there has emerged from the ground near Elden Mountain a rectangular building measuring 145 by 125 feet, containing nearly forty rooms and a large kiva, from a study of which a good idea can be obtained of the aboriginal architecture of the neighborhood surrounding Flagstaff.—*Science*.

UNDER PROFESSOR FRANZ BOAS, researches into the social organization and mythology of Indians is being carried on in the Southwest by Dr. Gladys Reichard and Dr. Ruth Benedict. In Zuni, Dr. Benedict has been able to get esoteric versions of the more ritualistic myths, and the six complete "medicine talks" of the emergence belonging to the three ranking priests and the three katsina impersonators, said Professor Boas, in summarizing the progress of the researches. "The material is of importance in the understanding of ceremonial procedure and of the mythological pattern in the Southwest. Dr. Reichard has almost completed her manuscript on the social organization of the Navaho and hopes to finish it before the end of the year."—*Science*.

HARLAN I. SMITH, accompanied by T. B. Campbell of the engineering department of the Canadian National Railways, is at the present at Kitwanga, B. C., in charge of the preservation of Gitksan Indian totem poles in what may be termed an out-of-door museum. This is both a place of anthropological interest and tourist attraction. There are seventeen totem poles and two totem figures.

The work of preservation is carried on for the Department of Indian Affairs under the direction of Dr. Duncan Campbell Scott, F.R.S.C., Deputy Superintendent General. The actual work is done by the Canadian government museum which is represented by Mr.

Smith. This work was begun at Kitwanga in 1925 and will probably be completed this season.

Next year it is expected the totem poles of Gytsegyucka will receive attention and later those of Hagwelget, Kispiox, Hazelton, Kitselas and Kitwancool. In all there are about thirty-three totem poles which can be seen from passing trains on the Canadian National Railway or a total of over one hundred within a fifteen mile automobile ride of stations on that line, which is probably the only line in the world from which totem poles may be seen.

PROFESSOR RADCLIFFE-BROWN recently visited the Department of Anthropology at the University of California, while on his way to Australia to take charge of the Department of Anthropology at the University of Sidney. He was formerly associated with the University of Capetown, South Africa. Professor Radcliffe-Brown is well known among anthropologists for his excellent work in the Andaman Islands.

EDWIN M. LOEB, research associate of the University of California, who is making a survey of the inhabitants of the Mentawi Islands, was recently the guest of the Sultan of Djocjakarta in Java at a royal ceremony given in honor of Queen Wilhelmina of Holland. Dr. and Mrs. Loeb left Berkeley last December visiting the Hawaiian Islands, Japan, Java and Sumatra. The Mentawi have received the attention of the university because they are reported to have been untouched by past waves of Mohammedan civilization which have swept over the Indonesian group of islands.

WE NOTE WITH REGRET the death of Sir William Ridgeway, Disney professor of archaeology at the University of Cambridge.

HERBERT W. KRIEGER, curator of ethnology at the National Museum has recently returned from southeastern Alaska where he spent some time among the Indians for the Bureau of American Ethnology. He states that the Indians of this region are facing hardships due to the diminution of their principle food supply, salmon, which is now chiefly in the hands of private companies. Disease and poor living have also severely affected the Indians so that whole villages have been wiped out. The Indians are, he says, agitating for government care similar to that given the Indians in the United States.—*Science*.

MR. DIAMOND JENNESS, Chief of the Division of Anthropology in the Victoria Museum has returned from a four month's trip to Bering

Strait, Alaska, where he excavated ancient Eskimo ruins and studied the local dialects in an effort to determine the origin and antiquity of the Eskimo culture. At Wales, the nearest point of Alaska to Asia, he unearthed ruins belonging to four distinct periods, all of which preceded the discovery of Alaska by Europeans. Subsequent excavations on the Diomed Islands confirmed those at Wales and also revealed the presence of an earlier culture, no traces of which have yet been found within Canadian territory.

MR. D. S. DAVIDSON has been appointed instructor in Anthropology at the University of Pennsylvania. He spent part of last summer in the field among the Indians of Grand Lake Victoria and Lake Barriere, Canada, investigating territorial divisions, boundaries, and social organization of the northern Algonkian.

DR. H. H. JUYNBOLL, director of the Royal Ethnographic Museum of Leyden, Holland, is visiting the United States to inspect a number of the larger museums with a view to making exchanges.—*Science*.

BARON ERLAND NORDENSKIÖLD, professor of anthropology at the University of Gothenburg and director of the Museum of Gothenburg, has spent the fall of 1926 in the United States where he has lectured on anthropology at the University of California. His courses have been on South American archaeology and ethnology. Baron Nordenskiöld went to South America at the end of the fall term.

RELIGIOUS EMOTION VS. SOCIAL EMOTION

The Pit River Indians had no religious ceremonies. All their *religious* experience was centered on the *individual* experience, on the relation of the individual to that in the universe which is sacred, which is holy, which is full of wonder, in one word which is "*tinihowi*". Each man to himself, and to his own dreams, and to his own acquisition of "power". This is the era of the shaman. The shaman is the very opposite of the priest of an organized religion. The true shaman goes by no traditional ceremonies. He has his own way of operating. This is indeed religious experience. It is subjective, religious experience, pure and unalloyed, unmixed with social complexes. If you get a *tinihowi*, keep him away from where there are people, he is shy, keep him in a secret place in the woods, don't talk to other people about him, not for a long time anyway, not unless you are a powerful, a fearless shaman.

It is true enough that in all this, in the ways of winning a *tinihowi*, in the curing by shamans, in the acquisition of luck, etc., there is a certain amount of social patterning. Certain general methods are followed by everybody in the tribe. It would be strange indeed if it were otherwise and the social factor did not penetrate the individual sphere. But what we are concerned with now is the separation of the two factors, not their commingling.

The Pit River Indians had no religious ceremonies. They never met together, like the Pomo, like the Wintun, like many neighbouring tribes where the religious experience had already entered on its long career of amalgamation with social expression, they never met to represent in pageant, and song, and dance, the adventures of Marumbda and Kuksu, or whatever the names of the Creators of the world. They had no annual dance for the dead. They had no religious ceremonies of any kind.

And yet they met together to have "big times", as they call it nowadays in their pidgin English. There is a verb for it in their own language: *tipsae*, to have a big-time, to have a feast, to celebrate; *lhipsaymidza*, "let's all go and hold a big-time."

What then was the *tipsae*, "the big-time"? A lot of people together at one camp, all *feeling good*, all happy and excited, and no restrictions. Not that there ever were many restrictions in Pit River life, in "early days", before the white men more or less imposed their code, but there were still fewer at a big-time. Dancing, singing, gambling, and an orgy of fornication. It lasted three, four, five or six days, as long as the food lasted, as long as the acorn mush was dipped out in the little drinking-baskets and passed around. And then everybody went away, contented, satiated, sobering up. But while it lasted everybody was drunk.

Drunk with what? That is the point. They had no intoxicating beverages in those days. In the first place they had no pottery and no vessels to hold liquids, aside from the tightly woven basket bottles. Still, they might have gotten drunk on herbs, like the marijuana, the peyote, and others. But as a matter of fact they did not know the use of any of these. They just got drunk on nothing, there is the plain answer. They got drunk on mere excitement, on the very excitement of being all together, a lot of people together, everybody just like one single body, all mixed and intermingled, and swaying together. *An orgy of social emotion*, of collective emotion, that is what the big-time was, but with nothing religious in it.

Let us not mix up our factors in the study of man's life. The religious factor is one, the social factor is another. They may commingle at times, they may even get so interwoven that a separate compound is evolved, with an energetic value of its own, as a *super-organic* factor, but essentially they are separate. The essence of religion is a subjective experience. And a subjective experience is primarily an individual one. Only at times and under special circumstances can it become collective.

I have been speaking of the Pit River Indians. I have never seen an Australian blackfellow, but what I have read in Spencer and Gillen gives me the same feeling. What is the corroboree but a big-time? Is there anything religious in it? Even the totemic ceremonies, is there anything religious in them? Plenty of emotion, granted, so much emotion that the old men have to rub their bellies together. But not religious emotion. We don't know what the religious emotion of the blackfellows is like. Someone ought to study that.

JAIME DE ANGULO

A LETTER BY W. H. JACKSON,
PIONEER SOUTHWESTERN ARCHEOLOGIST

Editor's Note. On April 27, 1926, Professor W. H. Holmes chanced upon, in his files, a letter written forty-nine years previously by his intimate friend and colleague on the Hayden Surveys of the Territories, Mr. W. H. Jackson. Messrs. Jackson and Holmes were pioneer archaeologists of the southwestern United States; both retain an active interest in current researches. Mr. Jackson's letter portrays with such vividness certain of his minor adventures as to warrant its publication at this time in the *American Anthropologist*.

Ft. Defiance, Arizona Territory,
April 27th, 1877.

MY DEAR HOLMES:

Have just returned from an eight days' trip to the Moqui Pueblos and through a very disagreeable snow storm that came near laying us up in the pine timber this side of the Rio Pueblo Colorado.

I found your letter awaiting me and it brought to mind at once a realizing sense of my obligations, so today, while our poor, tired Government mules are having a rest, I will give you an inkling of my whereabouts, doings and intentions.

In company with the Rev. Jackson I reached La Veta late on the 22nd, and Ft. Garland the next day by 3 P. M. Taking am-

balance from there we made Costilla for supper by 10 o'clock that same night and the following evening were in Taos. Laid over to hear preaching, but Monday made up for the loss of time by a hard day's work around the Pueblo. Two more days took us to Santa Fe, stopping on the way to visit and photograph several Pueblos and some fine old churches.

It took us nearly two days to get what we wanted in Santa Fe, viz. Government transportation. Were furnished with a buckboard and two spanking mules with orders for forage at all stations. Joined a party going direct to the Navajo Agency and were invited to mess with them. The party consists of five ladies and eight or ten gentlemen, including the Pueblo Agent, his wife and sister; Paymaster Tower, accompanied by wife, going out to pay off Wingate; Rev. Smith, the Presbyterian minister at Santa Fe, his mother and sister; the Rev. Jackson, myself, and some others, making a very pleasant crowd to travel with.

Left Santa Fe Friday noon, the 30th, and drove to Peña Blanca. Next morning crossed the Rio Grande, being nearly swamped and getting a good wetting, and then went on to the Puerco, a distance of 50 miles, and laid over there for Sunday services. Got to Wingate the evening of the 4th. Next day drove down to Zuñi and after two very profitable days there returned to Wingate by Sunday noon. Monday we started for Ft. Defiance with the larger part of those who had come through from Santa Fe, reaching this place the following day.

It began snowing just before our arrival and a more disagreeable condition of things would be hard to imagine. The wet snow in combination with the adobe soil under the feet of thousands of Indians resulted in a fine mixture for making bricks but poor stuff to walk about in.

The Indians were being assembled for the annual distribution of annuity goods. As they came up they were turned into a corral with high adobe walls, each man, woman and child receiving a ticket entitling them to their particular share of the goods. None could leave until all who were to receive presents had passed in—this to prevent duplication. By 5 o'clock over 9000 tickets had been issued, each representing an individual Indian, all crowded into that one corral, the snow falling so thick that one could hardly see across it and the mud so deep it would "mire down a saddle blanket," as the saying goes. About 200 chiefs and head men remained outside

and received their tickets, drawn up in line on horseback. When all had reported and were accounted for, the order was given to let them out, and such a crowding, turbulent, muddy mess of humanity one never saw before. They took it good-naturedly, however, and soon scattered over the surrounding hill-sides where they extemporized little wickiups and as night came on hundreds of camp fires were glimmering through the mist of the falling snow, some of them looking as if located up in the sky; and as it grew darker the whole horizon was glowing with the illumination. It was a grand and spectacular scene and I wish I had the power to do it justice.

The next day the issuing began and the snow continued to fall; and the same on the day after, except that in the afternoon it cleared up a little and I got out my camera and made about a dozen exposures on groups about the plaza.

Got off for the Canyon de Chelly the following day with a party of all the visitors and with two officers from the Agency, reaching the bottom of the Canyon at the foot of the Explorers column via Bat Canyon. Next day went down to the large ruin in the cave—photographed it and spent the rest of the day in climbing into others and hunting up new ones. Most of them closely resemble the San Juan and Mancos ruins, and the sandstone walls, also, are like those of the lower San Juan and the De Chelly with the same circular cave cavities. The great ruin, which Wheeler's party photographed, is much superior to any other in the canyon, a marked feature being the uniformity in the stone work, particularly the regularity of the "chinking", which consists of well defined and even layers of small chips of sandstone, averaging one-fourth of an inch thick and three or four long, alternating with other layers or courses of stones of about three inches in thickness. A round "estufa" with very thick walls, is a prominent feature in the group of ruins below the cave. By the way—the only round estufas I have seen thus far were at Taos, where there are seven, all detached from the main buildings. All that I have seen in the Moqui Pueblos, and others so far visited, are square.

Our second day in the canyon was Sunday and although there were two ministers and three ladies in the party, I managed to slip out with my camera and put in a good day's work. In the evening we had services in a deserted hogan near our camp. Monday, Dr. Jackson, I and the two officers extended our trip to the head of the canyons, but about noon a severe wind and snow storm came up

that sent us back to camp. The storm let up in the afternoon, giving us an opportunity to get out of the canyon and then back to the brink where I made some exposures looking down into the deepest part of it. The view was magnificent, but cloudiness with occasional flurries of snow made a poor, flat lighting. Our camp that night made some capital studies and effects—groups gathered about the different fires, the snow covered ground and fast falling flakes made wonderful pictures. Meanwhile the ladies sang and made the night merry. When it came time to retire they occupied an old hogan near by despite their preconceived prejudices.

The day after getting back to Defiance, and after seeing all the rest of our company off for home, Dr. Jackson and I harnessed our mule team once more and started for the Moqui Pueblos, taking with us Billy Keams as interpreter. The first day out was beautifully clear, the finest kind of a summer's day. The second day the wind came up and blew great guns, and when we got into a sandy country it compelled us to turn aside into the timber and make a dry camp. It was impossible to see ahead and the mules could not be forced against it. The next day was the same but we managed to drive through it to the first Pueblos. The mesas are surrounded by great seas of sand and it appeared to be all in the air as we rode through it. Small consolation for me as a photographer in that kind of weather. But, contrary to expectations, the next day was as fine a one as I ever saw. It was Sunday, but I improved every moment of it. Dr. Jackson remained secluded in one of the houses all day and I couldn't imagine why until that evening Keams and I reckoned up and found it was Sunday. Monday was another fine day in which we visited Oraybe and made some 15 or 20 negatives, getting through in time to make a half dozen views in Shepaulevay and then get over to Moosongnevay a little after sundown. Made views there in the morning and also in Shemopavay and got back to Tewa by noon.

The afternoon until 4 o'clock was spent in trading for various objects of interest, such as we could pick up, mostly pottery; and then taking everything to the foot of the mesa, reloaded the buckboard and started back, going 15 miles to the Agency that evening. The next day's travel on our way to Defiance carried us into the snow storm referred to at the beginning of this letter, but we passed the night comfortably by building a brush shelter and making a big piñon fire. Our mules came near getting away from us here and setting us afoot. Yesterday's travel in from that camp was a hard

one, the adobe mud was soft and deep under the snow and the mules' feet balled up to the size of peck measures. I walked more than half the way.

So much for what has been done. We go from here to Wingate and then separate—Dr. Jackson returning to Denver and I to prepare for a trip to the Chaco. Can't find a soul to go with me from here, even the Indians wont undertake it for \$5.00 a day. I hope to find some means at Wingate, or at some point between there and San Ysidro. The officers at the various posts are very kind and anxious to render any aid in their power. On my way back to Santa Fe I expect to visit Laguna, Acoma and several other Pueblos.

I have been picking up many articles of interest but am disappointed in not getting anything that is extra fine in the way of Navajo manufacture. These things have to be picked up as opportunity offers, and are not to be had just when wanted. The traders have nothing worth while, but tell me they can get almost anything by taking a little time for it. A new, first class, and complete Navajo woman's dress will cost about \$25 or \$30. Do you want one? The men's dress is less distinctive, consisting of a blanket, cotton shirt and drawers, leggings and moccasins—the two latter articles being generally very fine and sometimes ornamented with \$15 or \$20 worth of silver buttons of their own make. The woman's dress mentioned consists of a double-blanket skirt of fancy design and colors, a shawl blanket to go around the shoulders, buckskin leggings, moccasins and fancy scarf to go around the waist, also of their own weaving.

I have the opportunity for getting many fine pieces of pottery for a small amount and have already made quite a collection. Got some odd pieces at Zuñi. If you, or any of the others, want any special thing, let me know at Santa Fe. Expect to be there about the 20th of May.

My paper film seems to be working all right, although I have developed one small lot only, but that came up so well, so easily and uniformly that I have banished all fears as to the final result. The only fault I found was that I had been over-exposing. As the stripped film is quite thin I think it best not to remove any more negatives from the paper than the specimen I have sent Frank, until I have the opportunity to transfer to glass, or give additional coatings.

I shall develop again at Wingate, but most of the paper I will keep until I get home where better conveniences will be available. Tell Stevenson I'll write him something for publication, as he requested, from Wingate to go by next mail.

Give my regards to the Doctor, to Stevenson and all the "boys",

Yours hastily,

JACK

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A REVIEW

By N. C. NELSON

CHINA has at last been invaded by the prehistorians and a flood of light has suddenly been thrown on this the last archaeologically dark domain of the Asiatic continent.¹ Almost it is a matter for congratulation that the event did not happen sooner, or at least that it came as it did. For it is extremely fortunate both for China and for the science of archaeology that this new field should be opened up by men of scientific training and attainment, men competent to do a model piece of work and to set a standard for future workers. It should save time and money and confusion.

Precisely how the investigations resulting in the cited list of papers came about is not made entirely clear. To all appearances the splendid achievements of the three men concerned are mere

¹ Essays on the Cenozoic of Northern China. By J. G. Andersson. *Memoirs of the Geological Survey of China, Series A, No. 3.* 152 pp., 3 maps, 9 pls. Peking, 1923.

An Early Chinese Culture. By J. G. Andersson. *Bulletin of the Geological Survey of China, No. 5.* 68 pp., 17 pls., 15 text figs. Peking, 1923.

The Cave Deposit at Sha Kuo T'un in Fengtien. By J. G. Andersson. *Palaeontologia Sinica, Series D, vol. 1, Fasc. 1.* 43 pp., 12 pls., 26 text figs. The Geological Survey of China, Peking, 1923.

Preliminary Report on Archaeological Research in Kansu. By J. G. Andersson. With a Note on the Physical Characters of the Prehistoric Kansu Race, by Davidson Black. *Memoirs of the Geological Survey of China, Series A, No. 5.* 56 pp., 12 pls., 10 text figs. Peking, 1925.

Note sur deux instruments agricoles du neolithique de Chine. By E. Licent and P. Teilhard de Chardin. *L'Anthropologie, tome xxxv.* 12 pp., 3 text figs. Paris, 1925.

Le Paleolithique de la Chine. By E. Licent and P. Teilhard de Chardin. *L'Anthropologie, tome xxxv.* 34 pp., 1 map, 15 text figs. Paris, 1925.

accidents—by-products, as it were, of research in the wider domain of natural science. Men with more distinctly anthropological interests had been in the field before and we possessed brief articles, for example, by E. Borschmann, J. Edkins, E. Faber, E. H. Giglioli, and B. Laufer, written, some of them, under such titles as *The Stone Age of China* and *Prehistoric China*. So far as can be judged, however, our French and Swedish naturalists took their starting point from Laufer (who had doubts about a Stone Age in China) and from R. Torii, the Japanese archaeologist who, in 1914 and 1915, made us familiar with the character of Stone Age remains in eastern Mongolia and southern Manchuria.

Dr. J. G. Andersson, who was formerly Director of the Geological Survey of Sweden, came to China in 1914 to serve as Mining Adviser to the Chinese Government. For a time, he tells us, his technical work kept him busy to the exclusion of everything else, but in 1916, prompted by an accidental fossil discovery, he began definitely to plan a campaign for the study of the Cenozoic deposits of northern China and obviously he has of late years given a large portion of his time and attention to the special subject of human prehistory. His first publication listed above comprises a series of brief preliminary reports on the resulting field observations, covering in particular the red clays (*Hipparion* series) of Tertiary age; the gravels, sands, and loesses of Quaternary date; as well as such post-loessic formations as peat bogs and other sedimentary accumulations of recent and historical times. In addition to the open air surveys, a considerable number of caves were examined, some of which contained fossil-bearing deposits representing various faunistic periods.

Several of these papers, while not purporting to be archaeological in primary intent, have definite bearings on the geographic and geologic possibilities for the occurrence of early human and proto-human remains in North China. Other articles are specifically concerned with cultural data. Among these is one describing a number of stone, bronze, iron, and ceramic objects from certain peat bogs in the Peking plain. In a special section headed "Early Man," brief consideration is given to the anthropoid (?) tooth described many years ago by Schlosser and by

him referred to the Tertiary. The human sacrum from Honan province, described by Matsumoto in 1915 as exhibiting Neanderthaloid features, is also discussed and with the assistance of Dr. Davidson Black shown to be a modern survival. Finally, some flaked stone objects found on the surface near Kalgan in Chihli province are described and figured, among them a large blade resembling the obsidian specimens commonly found in our Pacific Coast states. A comparison with the Solutrean laurel leaf point is hazarded, but contemporaneity is not insisted upon. The author concludes by stressing the point that while his investigations have revealed the wide distribution of Eneolithic (transition from stone to copper) remains,

all we have to say at present is that we know of no undisputed proof of Palaeolithic or early Neolithic man in North China (p. 142).

The second and the most suggestive paper is devoted chiefly to a preliminary account of the discovery and partial excavation, in 1921, of his great Eneolithic type station, the Yang Shao. This is an ancient village site located about five miles north of the Mien Chih Hsien railway station in northwestern Honan, i. e., a little south of the Yellow river and not far below the great elbow—in other words close to the heart of the region in which tradition places the origin of Chinese civilization.

More specifically, the Yang Shao site is a refuse deposit measuring 480 by 960 meters and averaging three meters in depth. It rests on a sloping plateau consisting mainly of Tertiary red clays and is bounded on all but the upper side by great ravines or gulches attaining depths of forty meters. Illustrations of these gulches may be seen in Dr. Andersson's article in the Swedish anthropo-geographical journal *Ymer* for 1923, p. 239, etc. The author has come to the conclusion, prematurely it seems to me, that these immense channels have been eroded in the plateau since the deposition of the village debris because

in many places all along the ravines the culture deposit forms isolated pillars which are difficult of access and which are evidently only isolated remnants of an earlier more continuous deposit (p. 20).

This perhaps need not be taken as a demonstration of extreme age for the defunct village, inasmuch as Père Teilhard and Dr.

Andersson both emphasize the evidence in various parts of North China of marked erosional activity in recent times. Nevertheless, these "ravines" are what in America we should call great gulches or moderate size canyons and, unless checked by incontrovertible data, it would seem to the reviewer rather probable that while no doubt some erosion has taken place along the escarpment margins of the culture deposit, the great gulches were there when the ancient village was founded and were in fact the principal reason for the choice of location. The steep gulch walls afforded excellent natural protection such as was commonly taken advantage of, for example, in our own Southwest and, as we shall see later on, also in Kansu province.

An interesting cultural feature, revealed in the escarpment walls, is a series of pits dug into the original red clay formation and now filled with artificial debris. These pits are circular in plan and taper upwards. Their depths range from one half to two meters and their diameters average from two to three meters. Being for the most part too small for dwelling purposes, they are thought to resemble closely the "cellar pits" of Neolithic Europe, while of course they find close parallels also in our American storage pits.

The excavations made at Yang Shao, though limited in extent, yielded excellent results. No complete inventory is given, but of first importance may be mentioned a series of about sixteen good skeletons, to which we shall refer later on. Of the animal bones found the vast majority belong, significantly enough, to the domestic pig. The artifacts include objects of stone, bone and antler, mussel shells and burnt clay, aside from true ceramics. Stone was used for rectangular perforated knife blades (still surviving in metallic form in China), axes of the celt type, adzes, chisels, hoes or mattocks, pestles or mullers, spinning whorls, spear and arrow points (of ground slate), and certain large flat rings, possibly armlets. Bone was worked into awls, needles, arrowpoints, rings, and apparently other forms not specified; while antler was utilized for two axes resembling those of the Danish shellheaps. Mussel shells were apparently employed for rings and arrowpoints. Burnt clay, finally, appears in the shape of

rings, spherical balls, and above all in a rich assortment of pottery which by itself constitutes the bulk of the collection.

The Yang Shao ceramics divide into two great classes, hand-made and wheel-made, with some additional specimens which show the utilization of both techniques. Briefly characterized, the hand-made ware is thick, coarse-tempered, devoid of slip and therefore of natural gray to brown color, and the surface, when not left plain, is either marked by textile or mat impressions or is checker-stamped. The wheel-made wares, on the other hand, are thin, finely tempered, with surfaces (1) left natural and treated much as above, (2) polished and fired to a shiny black or red, (3) covered with a red or white slip which in turn is ornamented with black or red geometric patterns. Further contrast appears also in the vessel shapes. Thus the hand-made wares seem to be confined to mugs, jars with either flat or pointed bottoms, and two distinct forms of tripod vessels (acutely observed by the author to bear a strong resemblance to certain bronze vessels of the Chou dynasty); while the wheel-made series include bowls, jars, vases, high-footed bowls, pots, pitchers, tumblers, etc. The painted wares are said to run largely to bowls. As a matter of general interest it may be observed also that, with a very few marked exceptions, all the vessel forms are flat-bottomed and that lugs, when used, are always vertically placed. It is a temptation to describe and analyze this Yang Shao pottery in much greater detail largely because of the striking similarity which the painted series bears not only to the Eneolithic pottery of the eastern Mediterranean area but also to our own Pueblo and Calchaqui ceramics.

There remains to add that certain suggestive features of this discovery at Yang Shao and at other places, near and far, prompted the author to undertake comparative studies in various directions—duly set forth in the first and last parts of the paper—and which in time led him to two significant conclusions. One is that, as already intimated, several of the Yang Shao traits, such as the rectangular perforated knife, the adze, the stone arm-lets, and the peculiar tripod pottery vessels, have close parallels in historic Chinese culture and in at least two instances survive

in but slightly modified form, though in a different medium, down to the present day. Dr. Andersson is so impressed by these survivals that he ventures to designate the Yang Shao complex "An Early Chinese Culture." The other conclusion is that there is a marked similarity between the Yang Shao wheel-made pottery—in particular the painted ware—and the Eneolithic ceramics, for example, of Anau to the east of the Caspian Sea, Susa near the head of the Persian Gulf, and Tripolje in southwest Russia. In this view he receives support from at least two European students of Near East archaeology, with the result that he feels warranted in broaching the hypothesis that we have here in Honan province substantial evidence of contact between the West and the East in prehistoric times.

In concluding his paper the author is still struggling with a number of difficult problems growing out of his discovery. The available evidence is conflicting and some of the conclusions to be derived from it are of such import, with reference especially to the origin of the Chinese and their civilization, that he may well pause. He does not venture, for instance, to say explicitly whether he would identify the Chinese people with what appear to be the basic or localized elements of the Yang Shao culture complex or with the bearers of the exotic pottery derived, let us say, from the Near East. Nor does he take a definite stand with reference to either the *age* or the *culture stage* represented. He admits, on the one hand, that the Yang Shao furniture is distinctly Neolithic; but, on the other hand, because of the close similarity of the tripod vessels to the Chou bronzes and also on account of the wheel-made pottery, he feels inclined to date the Yang Shao culture just beyond the dawn of Chinese history, i. e., to the third millennium B. C. and to call it Eneolithic. These are no doubt safe and sane conclusions; but meanwhile one can hardly avoid suspecting that further excavation at Yang Shao will ultimately reveal a stratigraphic separation between the obvious Eneolithic stratum, of comparatively recent date and foreign introduction, and a true localized Neolithic stage of somewhat greater antiquity.

The third publication is a final report on the topographic and cultural features of a small cave, discovered and excavated also in 1921, in Fengtien province, Manchuria. Sha Kuo T'un, after which the site is named, is a junction terminal on the Peking-Mukden railway, barely seventeen miles inland from the north-western extremity of the Gulf of Liao Tung, an arm of the Yellow Sea. A belt of limestone country rises here, back of the broad coastal plain, and caves are fairly common.

The Sha Kuo T'un cavern is situated about 216 meters above sea level and faces E-N.E. In dimension it has a length of 6 meters, a width of 2.5 meters, and a maximum frontal height of fully 2 meters. It was found filled evenly to within half a meter of the horizontal ceiling with soft debris, which attained a maximum depth at the front of 1.5 meters. This floor deposit was a homogeneous soft gray loam mixed with angular fragments of limestone and through the mass ran three successive fireplace horizons made up of ashes, charcoal, and other evidences of human occupation. The lowest and most conspicuous of these stratification levels furnished nearly all the archaeological material recovered; but several items were found, both above and below, in the cave earth proper, as well as in the fireplace levels, with some curious occurrences suggestive of former disturbance. All of the deposit was carefully excavated and for its size yielded an exceptionally instructive series of relics.

The collection recovered includes marine shells and animal bones not yet identified. It includes the fragmentary, partly burnt and completely disarticulated skeletal remains of at least forty-five human individuals, to which reference will be made later. Finally, there is a small but varied series of artifacts, which the author has classified, described, and figured in detail. The inventory is as follows: Chipped stone is represented by raw flakes, flakes with secondary chipping on one face (ineptly compared to Chellean tools), a drill point, and three arrowpoints, each with concave base. Ground or polished stone appears in four small celts, a crude disk, 24 small pear-shaped buttons (marble and soapstone), 54 beads of globular, disk, and tubular forms,

about 18 flat stone rings—some large enough for bracelets, and a miniature sculptured animal figurine. Mussel shell is here positively used for rings and armlets, as suggested by the Yang Shao collections. Bone objects comprise awls, needles, tubular beads, an arrowpoint with stem and two wings, a chisel, and a polisher or wedge-shaped tool.

The ceramic remains are few and fragmentary but nevertheless make a considerable showing as to types, which obviously approximate those of Yang Shao. Three styles are distinguished: a coarse hand-made ware, unslipped and gray to brown in color, with either string or mat impressions, incised patterns, and sometimes also on laid or plastic decorations; a fine, thin, possibly wheel-made ware of unslipped brick red or shiny black color and without ornamentation; lastly, a moderately thin and fine wheel-made ware covered with a red slip and decorated in black. Dr. Andersson has made considerable effort to mend and to restore, with the result that we have at least the outlines of bowls and pots with flat bottoms, also bowls and uncertain forms of vessels with pointed bottoms, one jar with a narrow neck and vertical lugs, and at least fragments of what appear to be the toes of a tripod vessel.

Due consideration is given to both the horizontal and the vertical distribution of the archaeological remains and Dr. Andersson concludes from these that the whole sequence of layers represents one and the same culture stage. Still, as he points out, it is worth noting that the three or four fragments of polychrome pottery recovered were all found in the two bottom levels. The peculiar condition and distribution of the human skeletal remains also receive special attention and are in the end regarded as indicating that the cave was not used primarily either as a dwelling or as a burial place, but perhaps as a place for votive offerings. Cannibalism, the author thinks, is not demonstrated, though it is a possibility.

The striking similarities between this cave furniture and that of the Yang Shao village are briefly pointed out, likewise also the differences. One of these latter, apparently not mentioned, seems to be the occurrence at Sha Kuo T'un of *incised* pottery ornamen-

tation. Our author naturally seeks, also, for analogies in the Torii collections from South Manchuria, but finds only a few. The paper concludes with the opinion that this cave culture of Fengtien province is of the same date as the Yang Shao culture of Honan or possibly a little younger.

The fourth and last of Dr. Andersson's papers is a preliminary report on his most recent (1923-24) and very fruitful investigations in Kansu province. This strategic territory was explored westward to Kokonor Lake in Tibet and northward beyond the Great Wall apparently up to, if not beyond, the Mongolian border; but most of the intensive field work was confined to the vicinity of Lanchowfu, the provincial capital. This city is located on the Yellow river, more than 1500 miles from its mouth and in a region where several important tributaries branch off. All of these stream valleys exhibit a nearly uniform topography, characterized especially by a succession of terraces, and it is mainly on these terraces that the archaeological stations occur.

Two types of sites were here discovered, viz. villages and cemeteries. The ancient villages are situated mostly on the middle terrace, or more precisely on islands and promontories eroded along the edge of this terrace and which were chosen no doubt because of the natural protection they afforded. The grave fields, on the contrary, are generally located on the highest terrace. In all twenty-seven sites were discovered and examined, and these the author has segregated and arranged into six chronologic groups, some of which are represented by both villages and cemeteries, others by either one or the other. This grouping, while not final, is based on a number of criteria, such as variation in ceramic styles, presence or absence of copper implements, the increasing frequency of copper, etc. One of the chronologic steps is actually proved by stratigraphic superposition.

It would take too long here to name and fully characterize each of these six culture periods. Besides the data given are not full enough, except perhaps as regards the pottery. The statement is repeatedly made, however, that the stone and bone implements found in Kansu are of essentially the same character as those found in the Yang Shao sites of Honan. Several distinctly new

items are noticeable nevertheless. One is a knife made, Eskimo fashion, from a thin oblong piece of bone with a slit along one edge, set with flint flakes. Another is a supposed hoe blade improvised from a horse scapula. Jade rings and certain small incised bone plates are also noticeable. Cowry shells are found in what is thought to be the last horizon. Finally, the supposed upper three of the chronological stages are represented by stations containing a small series of copper and perhaps also bronze implements.

The ceramic features distinguishing the six tentative chronologic horizons of Kansu can be only briefly indicated. Wares of the first or oldest stage are mostly of the unslipped kind, with surfaces marked by either textile or mat impressions or decorated by geometric stamping produced with a comb-like instrument. Of vessel forms only the jar is mentioned. The second horizon—corresponding to the Yang Shao of Honan—furnishes pottery much like that of Honan, but of a paler shade. A special Kansu feature is that many of the household vessels are ornamented on the inside as well as on the outside. Also a distinct funerary pottery appears here, consisting mostly of large globular-bodied jars with wide or narrow necks, astonishingly like our Southwest ollas, and carrying its own peculiar decorative pattern. The third level is characterized by two types of vases, one large and tall with narrow neck, the other small and wide-mouthed. Both are painted with simple, almost crude, geometric straight-line patterns embodying zigzag, checker, and lattice elements.

The fourth level is very rich in pottery, which, moreover, is of a kind said to be entirely different from anything previously known. Household and sepulchral wares are not differentiated, the decorations on the two being at any rate much the same. As a whole these ceramics are of a porous and somewhat inferior quality; bottoms are concave and not flat as in earlier periods; shapes also are thought to be different, though that is not clearly borne out by the illustrations, which show only vases or jars. The decorative patterns are applied zonally and embody straight bands, wavy bands, triangle bands, and actual meanders. To these are added attached vertical elements and detached features,

including bilaterally symmetrical figures, such as volutes, as well as some crude animal representations.

The fifth ceramic group is a little indefinite. It is represented by a small amount of material from two different sites, and these, it is said, may even prove to be of different ages. The outstanding features are unslipped jars with saddle-shaped mouths and tripod vessels identical with one of the two forms found at Yang Shao in Honan. Onlaid or plastic decoration is sparingly applied. The association of copper objects alone would seem to separate this stage from the true Yang Shao. The sixth and last chronologic stage, found in the desert near the Mongolian border, is represented also by two distinct types of pottery. One of these is coarse, unslipped or only partly slipped, and comprises simple pots and pitchers. The other is a delicate ware, exquisitely painted with bands of triangles, chevrons, and simple lines, as well as encircling rows of conventionalized birds. This latter example is obviously of foreign origin and the author points out its possible affinity to a similar style found at Susa.

In taking leave of the Kansu cultures, as differentiated by ceramics, it is clearly out of place to venture on criticism. All the evidence is not presented. The author has naturally emphasized the differences which characterize the six or more successive groupings, differences which are no doubt much more real than the few illustrations can make clear to any reader. Still, the reviewer feels himself impressed not a little by apparent similarities. Thus the entire series of vessels illustrated runs to jars and vases of very similar body outlines, while in Honan many bowls were present. The illustrated specimens seem to be mostly hand-made, or at least only a few show that rigid symmetry suggestive of the wheel technique; but on this subject the author has yet to inform us. Flat bottoms (in one horizon said to be indented) and large vertically placed loop handles or lugs characterize nearly all the wares alike. The painted ornamentation on the inside of the vessel rims, said in the text to be a feature of the second or Yang Shao stage, is also noticeable in the illustrations representative of the third stage (Pl. II) and occurs in at least one instance in the ceramics of the first stage (Pl. V). Lastly, the

character of the painted ornamentation, while it shows variety, seems after all to belong to one family of designs, with the exception of the two fragments of Susa affinities. In brief, therefore, it would not be surprising if future study should prove some members of this ceramic sequence to have been contemporary. If not that, then the series must be genetically related and therefore presumably largely of local manufacture and origin.

In the last part of the paper Dr. Andersson takes up once more the questions of absolute chronology and cultural migrations. He has in the meantime profited by the critical comments elicited from several European students by his first semi-speculative endeavors in the second paper under review. The therein suggested Near East affinities of the Yang Shao pottery have been critically examined, for example, by Dr. L. Franz of Austria and by Dr. T. J. Arne of Sweden (see monograph on Yang Shao painted pottery, *Pal. Sin. Series D.*, Vol. 1, Fasc. 3), with the result that the date of the Yang Shao culture is now estimated at about 3000 B. C. Dr. Andersson does not stop here, however, but proceeds boldly, on the basis of the ascertained archaeological records of Scandinavia and Crete, to assign an average duration of 300 years to each of his six Kansu culture periods. This, it is thought, will bring the known prehistoric record of Kansu down to about 1700 B. C., or well within the range of semi-legendary Chinese history. There is perhaps nothing impossible in this reckoning; nevertheless it leaves something to be desired. Thus, it is admitted, on the one hand, that aside from the few surviving Yang Shao traits already mentioned there is little, if anything, even in the last Kansu horizon to indicate the approach of historic times. On the other hand, it is pointed out that Chinese pictorial script, ornate bronzes, etc., cannot be traced back historically beyond the 14th century B. C. In other words, there is still an appreciable gap to be bridged between Chinese history and what is obviously Chinese prehistory.

As to cultural migration, it follows from the above that the author now regards his earlier hypothesis of Mediterranean influence on the late Neolithic of China as substantially proved. It is not entirely clear, however, as to how much of Chinese culture

he would credit to the West and how much, if any, to the East itself. For while aware of the Licent-Teilhard discoveries of a Palaeolithic industry in the Middle Pleistocene of North China, he reiterates his belief—and rightly—in a Neolithic hiatus, devoting a chapter to its explanation on possible climatic grounds. It is true he later admits (p. 40) that there may be some indirect evidence pointing to a true Neolithic horizon for North China and, in fact, ends up (p. 50) by suggesting the presence of an early aboriginal culture, the thinly spread traces of which will ultimately be found. Still, these hypothetical inhabitants were in his judgment mere hunters and fishermen, with possibly a beginning of hoe culture, and had little or nothing to do with the bearers of the Yang Shao culture, which seems to have appeared suddenly and in a fully developed condition on the Honan stage. Otherwise stated, it seems to be Dr. Andersson's confirmed opinion that the entire Yang Shao complex was derived from without and presumably from the West. This, however, is a conclusion difficult to accept, both on general grounds and because the facts bearing on the subject do not all seem to point that way. Fortunately for me, Dr. Andersson has himself quoted several passages from the critical comments of Professor Karlgren of Sweden anent this subject and with the general tenor of which one finds it easier to agree. This view is, in substance, that the bulk of the Yang Shao traits surviving in historic Chinese culture were developed practically in place, while the painted ceramics—and probably some other features—alone had their impetus in the West.

Confirmation of this view seems derivable also from the skeletal remains, to the study of which we may now briefly refer. Professor Davidson Black, who took part in the excavations at the Sha Kuo T'un cave and to a lesser extent at Yang Shao, has all of Dr. Andersson's skeletal collections under investigation and he has appended a few preliminary observations on the Kansu material to the present paper. He has also, in the meantime, published a detailed report (*Pal. Sin.*, Series D, Vol. 1, Fasc. 3) on some nine comparable skeletal elements derived from the Honan and Fengtien collections. In preparation for these studies, it is well to remark, Dr. Black, as Professor of Anatomy at the

Peking Union Medical College has, in collaboration with his colleague Dr. Paul H. Stevens, for a number of years been collecting anthropometric data, especially on the North Chinese. And what has Dr. Black to say about the racial affinities of his prehistoric peoples? With respect to the Fengtien and Honan data, this, viz., that

in a host of both general and detailed characters . . . the Eneolithic and recent North China materials are similar. In a few features only the Sha Kuo T'un and Yang Shao material stand in sharp contrast to one another and to the recent North China Specimens. . . . It becomes difficult therefore to avoid the conclusion that the Sha Kuo T'un and Yang Shao peoples conformed to a type essentially similar to that represented by the present-day North Chinese with whom comparison has been made. (Op. cit., p. 98.)

When we turn to his brief statement on the Kansu skeletal remains, representing fully 120 individuals, we find him saying (p. 54) very much the same thing. Briefly stated, the majority of the prehistoric Kansu peoples are closely akin to those of Honan and Fengtien because they also

broadly conform to the modern type termed North Chinese or *Homo Asiaticus propius*.

The exceptions are four skulls, derived from the second and third culture levels, which have several traits in common with western races but nevertheless, in their sum total of characters, "show a fundamental similarity to the proto-Chinese type" with which they were found. The significance of this sub-type is left for future determination, but its presence in West China is certainly nothing more than what we should expect.

The above must suffice as a summary of Dr. Andersson's investigations to date. Initiated by himself, scarcely a decade ago, and assisted at first by only a few scattered missionaries, his discoveries today engage the attention of several collaborators in both Europe and America, as well as in China. The promising results have won for him the cooperation of the Geological Survey of China, under whose auspices the sumptuous publications appear, and also the support of the Swedish Research Committee, headed by H. R. H., the Crown Prince of Sweden, who has himself for years taken an active interest in scientific investiga-

tion, including archaeology. It is not often given to one man to accomplish so much in such a short time. In barely five years we have advanced beyond Chinese traditions and western speculations, such as those of Terrien de Lacouperie, to the possession of substantial facts regarding the "mysterious" origin of Chinese civilization and are in a fair way to understand the source and the essential unity of all Old World civilizations. One cannot do less than congratulate Dr. Andersson on so enviable an achievement.

When we turn to the brief publications of the two remaining authors their story is scarcely less remarkable. Father Licent came to China also in 1914 and has been steadily active since then collecting natural history materials of all kinds. His efforts have been confined largely to the Yellow River basin and have been in the interest mainly of the Hoangho Paiho Museum in Tientsin, an institution of considerable scope and promise founded by himself. As a matter of course a part of his time and attention has been given to the location of Tertiary and Quaternary fossil deposits and to the collection of specimens from these sites. When therefore Father Teilhard de Chardin, representing the Natural History Museum of Paris and other French scientific institutions, came out to China in 1923 to accompany his friend Licent on a field trip to the Ordos (the territory lying within the northern limits of the great bow of the Yellow River) it was ostensibly in the interest of palaeontology and geology. It is true, Pere Licent had in 1920 found three or four quartzite flakes of possible artificial origin in and below the eolian loess of northeastern Kansu, some 300 kilometers south of the Ordos; but nothing is actually stated to show that these discoveries played any part in their joint enterprise. We may imagine their surprise, therefore, when they met with evidences of a Palaeolithic culture almost everywhere they went in both the western and southern Ordos, and their further surprise perhaps when later explorations in eastern Mongolia yielded them nothing but Neolithic data.

Their first paper features briefly some of the 1924 Mongolian discoveries. The locality in question centers around Dalai Nor Lake, approximately 400 kilometers due north of Peking, and

takes in the surrounding plateau country as well as the radiating drainage basins of the Tsiring gol, Shiling gol, Shara Muren, and Laoha Ho. In the last named basin, especially near Chifeng, and to a lesser extent also north and west, were observed good Pleistocene exposures; but these nowhere gave indications of Palaeolithic remains. Neolithic data, on the other hand, occurred in many places not only on the surface but *in situ* throughout the upper black sands, one to four meters thick, which generally constituted the surface soil.

The richest of these Neolithic sites is described at Linn-si, a small town located apparently between the Shara Muren river and Dalai Nor Lake. It is marked by a hollow, about 1.5 kilometers long, blown in the black surface sands, the floor of which was thickly strewn with artifacts—derived from the swept-away matrix. Examination of the bordering escarpments gave ample proof of this origin as they revealed an abundance of the same types of material. Among the relics here recovered are mentioned the following: bones of recent and in fact mostly domestic animal species; pottery of the hand-made and unpainted order, similar to the ware found by Torii in Manchuria; and a varied series of stone objects. These last are mainly of porphyry, jasper, and chalcedony, but rhyolite and granite also served. The implements so derived comprise mealing stones, crude hammerstones, and scrapers which at first sight might be regarded as palaeoliths but are mixed with small scrapers, drillpoints, flaked celts, arrow-points, conical cores, and fine long slender flakes derived from such cores—identical in every particular with Neolithic remains found by the Third Asiatic Expedition in 1925 in western Mongolia.

One apparent exception to this suggested uniformity of the Mongolian Neolithic is the discovery at Linn-si of two large flaked blades, respectively 27 and 35 cm. long, more or less polished by use. The specimens are of rhyolite and are identical in form with the one previously mentioned as found by Dr. Andersson near Kalgan. Their Neolithic date is fortunately proved at Linn-si. The polished and striated condition, especially of one of the specimens, suggests to the authors that they were used for

agricultural purposes, not as mattocks but as plowshares. Indeed they feel the more warranted in this conclusion because Professor W. K. Moorehead has assured them of the similarity of the Mongolian specimens to the fine so-called hoes found in our own Ohio and Mississippi bottoms; and they are consequently inclined to regard their discovery as a new proof of the peopling of America in part from Mongolia. This suggested similarity cannot be denied, though one of the Linn-si pieces, in form at least, resembles a Northwest Coast club more than it does a hoe or spade. But the idea that this resemblance indicates an early connection between the Mongolian and Ohioan cultures seems hardly more plausible than that there should have been a direct relationship between the cultures of the eastern Mediterranean and the American Southwest, however loudly the ceramics of the two regions seem to proclaim such a kinship. Elliot Smith alone, I suppose, would welcome any such hypotheses.

The last paper by Licent and Teilhard is a preliminary account of their Ordos discoveries. It opens with a brief delineation of the local Cenozoic geology, which seems to agree in all of its broader features with the observations of Dr. Andersson and others in adjacent parts of North China. The Pliocene red beds are succeeded by Quaternary gravels and sands which in turn are capped by a mantle of loess, itself now considerably eroded and partly covered by wind-blown sands and fluvial deposits. In other words, the region has suffered a succession of climatic changes of considerable intensity, ranging from dry steppe conditions suggested by the loess to torrential conditions such as are now dissecting the loess at a rapid rate. It is this present-day process of vertical erosion which greatly facilitates the task of fossil hunting.

Our explorers entered the Ordos at its extreme southwestern limits, by way of Ningsiafu, and discovered here at once, in the immediate vicinity of the Great Wall, their first and most important Palaeolithic center. The principal station of the locality is situated near the hamlet of Choitongkou, where in a small stream valley of the same name was found exposed, close to the bottom of the locally 15-20 meters thick loess mantle, a well-

defined fireplace or habitation stratum about half a meter thick and 20 meters in extent. The indicated settlement had apparently been located on the edge of either a stream or a lake. From a space of about 40 square meters of this deposit were excavated more than 300 kilograms of worked stone material and considerable quantities of semi-fossilized bone fragments that were strictly speaking kitchen refuse. These fossil remnants represent, in order of abundance, the wild ass, horse (?), hyena, gazelle, ostrich (*Struthio-li.hu:*), *Bos primigenius*, *Rhinoceros tichorhinus*, and perhaps *Ovis ammon*—a fauna which as a whole is regarded as indicative of Middle Pleistocene times. Some of the same species were also found above in the inclosing loess itself, as were likewise a number of artifacts.

The artifact collection from Choitongkou consists entirely of flaked and chipped stone specimens, which are of rough finish, being made mostly of quartzite, the chief local medium available. In the cited inventory are anvils, hammers, nuclei, rough blanks or bifaces, as well as a series of flake or blade forms such as points, side-scrapers, end-scrapers, and perhaps a rudimentary burin. All retouching is done on one face only as in the typical French Mousterian and Aurignacian stages, which this Ordos culture approaches. The reviewer has recently examined a series of representative specimens at Tientsin and finds himself much impressed by the lack of refinement and definition of the industry as a whole—a condition which is not entirely accounted for by the more or less intractable raw material used. Flint-like rock, including jasper, was utilized in addition to the quartzites. In general appearance the work impresses one as Mousterian; but the technique employed as well as some of the forms produced are obviously more advanced and comparable to the Aurignacian. Under these circumstances, and especially in view of what was found by Von Merhart in the Upper Yenisei (AMER. ANTHROP., 25; 21-55), the complete absence of bone implements in the Ordos industry is very strange. It suggests to the reviewer the probability that the center of origin for the culture lies elsewhere, presumably to the west.

With this fairly complete characterization in mind, it is unnecessary to go into details about the other discoveries, which were quantitatively unimportant though perhaps slightly more significant as to age. One locality is about 150 kilometers E.-S.E. of Choitongkou, centering in the headwater region of the Shara-ossogol, in the south-central Ordos. Here, in one place, at a depth of some 55 meters, beneath a succession of dune and lake deposits, was found a very rich fossil stratum. Extended excavations revealed all the animal species found at Choitongkou and many more besides. This faunal material was also at least in part, kitchen refuse and included some deer antlers which had the tines broken off in identical manner and showed besides some indications of having been used perhaps as clubs or pounders. Man's presence was proved, moreover, by the recovery from the deposit of a handful of chipped stone specimens, mostly of a diminutive and nondescript character but with a few forms similar to those of Choitongkou. The last region to yield Palaeolithic artifacts in place was another 50 kilometers southeast, namely, at Yanfang-tou, in northern Shensi. This locality is well within the grand loess belt of North China, the deposit attaining here a thickness of 150 meters. Only about six rudely flaked quartzite pieces were discovered at this place, along a 5 kilometer exposure; and these all came from the conglomerates beneath the loess where they were associated with a mixture of Middle Pleistocene and older, i. e., derived fossil remains. Such derived fossils suggest that the artifacts may themselves antedate the inclosing conglomerates but this possibility is provisionally denied. The geological settings of these three specified occurrences of the Palaeolithic, it will be seen, differ somewhat; nevertheless, the uniform character of both the industrial and faunal remains is such as to incline the discoverers to the belief that all are of approximately the same age.

These three major localities, some of them with several subsidiary stations, range roughly from Ningsiafu eastward along the Great Wall almost to Yulinfu, a distance of 200 kilometers. A previous discovery by Pere Licent, now taking on real signifi-

cance, has already been mentioned at Kingyangfu, 300 kilometers to the south in Kansu province. Lastly, on their return journey, following the great bow of the Yellow river, our authors found typical weathered palaeoliths on the surface at two different places in the western and northwestern Ordos, the latter site being nearly 200 kilometers north of Choitongkou. This ascertained distribution of industrial remains of nearly the same character and date is thought to indicate one identical culture which probably had an even much wider geographical range. Their surmise on this last point I am now pleased to be able to confirm, because the Third Asiatic Expedition found in 1925, in western Mongolia, surface traces of what is unquestionably the same culture.

In concluding, two negative features of the results to date are mentioned. One is the apparent lack of vertical range or time distribution of the mixed Palaeolithic traits discovered. Everywhere this nondescript culture was confined to the basal portions of the Middle Pleistocene deposits and nowhere did they find it in contact with the commonly superposed Neolithic. Between the two stages there is affirmed to be a great gap. Nevertheless it is noticeable that their Neolithic is a true, perhaps an early, Neolithic and not a late Neolithic or Eneolithic as discovered everywhere by Dr. Andersson. The other negative feature is the complete absence of Palaeolithic skeletal remains. This is a serious matter, calling for further efforts; for, as the authors point out, until such remains are found, the loess man of China cannot be named.

SUMMARY AND CONCLUSIONS

The subject-matter of these papers has appealed to me as so new and so far-reaching in importance that I have allowed myself a recital of details beyond the scope of the usual review. Asia occupies a uniquely central position among the world's land masses and therefore any anthropologic discovery made within her borders has significance not only for herself but for every other part of the world. Asia is the traditional place of origin for things human; and if tradition nowadays counts for little, it need only be added that modern scientific opinion also favors Asia. This opinion may or may not be well founded, at any rate with respect

to culture. It may be nothing more than simple conformity to the ancient practice of relegating the source of things to realms about which we know nothing. But in any case the central position of Asia remains and cannot be ignored in the discussion of either origins or migrations.

First then as to Asia, or more precisely Greater China, and the facts there discovered in the last few years.

1. Palaeolithic remains of Mousterian and Aurignacian affinities and associated with a fauna of Middle Pleistocene aspect have been found by Teilhard and Licent rigidly *in situ* in and below the eolian loess at about twelve places in contiguous portions of the Ordos territory and the Shensi and Kansu provinces, i. e., about 800 miles up the Yellow river basin. Surface traces of a very similar stone industry have also been found by the Third Asiatic Expedition some 700 miles away in western Mongolia. In both localities the indicated culture seems to appear and disappear suddenly, showing no signs either of having developed in place or of having been modified into anything approaching, let us say, the Neolithic.

2. Neolithic remains are stated by Teilhard and Licent to occur at least superficially in the Ordos country and vicinity. In eastern Mongolia they found the industry both on the surface and in stratigraphic position in the black sands forming the top soil. Toril's discoveries in Manchuria were also made essentially on the surface and are in part regarded as of fairly recent date. My own Neolithic finds in western Mongolia, on the other hand, gave indications of considerable antiquity; for the remains there occurred deep down in ancient sands and were besides the outgrowth of an earlier or distinctly pre-Neolithic industry. But, whatever the range in time, we have positive evidence that a true Neolithic culture once flourished pretty much throughout the entire zone separating Siberia and China proper, all the way from the Pacific shores to the Altai mountains.

3. Eneolithic stations to the number of thirty-eight in all have been found by Dr. Andersson ranging clear across North China, or at any rate from the Yellow Sea to Kokonor Lake, a distance of about 1200 miles. Most of the sites are however

in the west, or well up the Yellow river basin, in Honan and Kansu provinces. In addition, I have myself during the past winter found, away to the south along the Yangtze river in Hupeh and Szechuan provinces, the refuse deposits and scattered remains of a somewhat similar Eneolithic, or as I should prefer to call it, Late Neolithic culture.

What interpretation, it may now be asked, can safely be placed on this extraordinary array of facts? Three detached segments are indicated to us as being all there is in Greater China of the whole normal culture curve! This certainly does not argue for east-central Asia as being anywhere near the original center or centers of cultural dispersal, whatever be the palaeontologic indications with reference to man's physical origin. But perhaps further research within the limits under consideration may yet close the apparent gaps. Perhaps also the situation would look less puzzling were we in full possession of the details already made available by archaeological discoveries, for example, in French Indo-China, Yunnan, Tibet, and Siberia. Two Russian colleagues have recently hinted to me of both actual and potential discoveries in south-central and southeastern Siberia which might throw some light on China's prehistoric problems. But, accepting the facts as they appear, first with reference to the so-called Eneolithic culture stage, typical of the northern provinces within the Great Wall, and granting provisionally that this complex did not develop in place, we are bound to ask, where did it come from? To this question there appear to be only three possible answers.

It might have come all of it at different times from the West. Yet, except for the painted pottery of late prehistoric times, there is little either racially or culturally to show that it did so and at least some things to suggest that it did not. Thus several Eneolithic traits—semilunar and rectangular knives, unpainted pottery, etc.—which were undeniably present in Greater China when the painted pottery of Mediterranean aspect arrived and which survived in historic Chinese culture, have distinctly northern affinities. Indeed, the unpainted pottery of prehistoric North China belongs to an order of ceramics which has circumpolar distribution, being typical of much of North America, western

and northern Europe, as well as of northern Asia. If, therefore, this relatively primitive ceramic style and the various other traits associated with it came from the Mediterranean area it must have been in very remote times. Moreover, the suggestion is not wanting that the really localized culture of Yang Shao times, while it may have absorbed certain Mediterranean elements and profited by the stimulus, in the main repelled western influences, as Chinese civilization has done off and on down to the present time.

The Eneolithic of North China might also have come up from the distant South. Fenollosa presumably would have us believe that it did. And the large quantities of pig bones found in the Yang Shao and related sites, as well as the isolated discovery by Dr. Andersson, in a peat bog near Peking, of a pair of water buffalo horns, would seem to point in that direction. But the South, though perhaps first on the ground, is obviously not to be credited with everything Eneolithic in North China.. The North also presents weighty claims. A Neolithic culture flourished for a long period here beyond the Great Wall and several elements of the Yang Shao and later complexes to the south of the wall were undoubtedly derived from this source. Such a view is materially strengthened also by the fact that northern race traits characterize both the Yang Shao people and the historic Chinese. Were one therefore to venture a summary opinion based on the facts now available it would be this, namely, that the Chinese nation and civilization are neither of them of western origin, though developed no doubt under repeated stimuli from the West, but are rather a mixture of ancient and distinctly East-Asiatic elements of which the northern, and probably the latest, have been on the whole the more aggressive, though they are not yet wholly dominant.

But if in some such way we may close the gap between the Eneolithic and Neolithic of China, it is otherwise with the hiatus separating the Neolithic and Palaeolithic. In Mongolia this lacuna is less marked than in China proper, but it is there and must for the present be left unexplained. The same is true with respect to the Early Palaeolithic. I had the best imaginable opportunities

for discovering traces of this stage in western Mongolia, but found nothing, at any rate nothing corresponding in type to the Lower Palaeolithic of western Europe.

Second, as to the wider significance of these recent archaeological discoveries in China. With respect to the Palaeolithic there is nothing positive to be said. Its geologic position and its fossil associations insure its antiquity; but whether this proved age is equal to or is appreciably greater or less than the age of the corresponding culture levels in western Europe cannot now be stated. Presumably, however, the two are nearly contemporary. Its geographic range is also unknown at present. Indications are that it forms one area with the Yeniseian Palaeolithic, which being the more richly furnished must itself be nearer the original source than is the Ordos phase. This seat of origin would appear to be either west or southwest, because there are as yet no indications that east-central and northeastern Asia were reached by this Middle and Upper Palaeolithic wave—a circumstance which augurs strongly against these or earlier culture phases ever having reached the American continent. Corroborative also in a measure of this view, it may be added that the Stefansson collections from Pt. Barrow and other places in Alaska reveal no elements that need be taken as Palaeolithic.

When we turn to the Neolithic there is scarcely more to be said. The culture attains a considerable age, for instance, in Mongolia, while in Manchuria and elsewhere it has survived down to well within historic times. It is widespread at least in the northeastern quadrant of Asia and has a number of traits in common with both Europe and America. Whether or not this is to be taken as an indication that northern Asia fostered the development of the Neolithic and that it spread thence into Europe and America, it is of course too early to say.

In conclusion it will be enough to state that while our recent investigations to date have furnished no evidence either for or against the biological origin of man in Asia, the evidence brought to light respecting the beginnings of culture points elsewhere.

PEKING, JULY, 1926.

P.S. Since completing this paper and while searching the library of the Geological Survey of China for possible archaeological literature relating to the southern provinces, I have discovered a number of important papers on recent archaeological research in French Indo-China, including Tonking, Laos, Burmah, and Cambodia. It is too late for me to incorporate the findings in the present paper; but I can do no less than state that the investigators have collected their data from caves, shellheaps, and villages, as well as from the surface, and that they have distinguished an early or primitive Neolithic (with possible Palaeolithic affinities) and a late or advanced Neolithic. The impression I have obtained from a hasty examination of text and illustrations is that, barring the stemmed ax blade peculiar to Farther India, the limited array of stone, bone, and shell objects, together with unpainted pottery, strongly resembles the equipment found by myself this past winter in the Yangtze Gorge country. The Indo-China complex is therefore probably another variant of Dr. Andersson's Yang Shao culture of North China. One of the papers embodies a review of all the recent East Asiatic discoveries on lines not unlike the present essay. The interested student should consult publications by H. Mansuy, Etienne Patte, etc., in the *Mémoires* (Tome x, xi, xii) et *Bulletins* (Tome vii, xii, xiii, xiv) du Service Géologique de l'Indochine.

THE SUMERIAN AND ANTHROPOLOGY

By HENRY F. LUTZ

THE following pages are intended to show that the Sumerian had a science which we may call anthropology, if we keep in mind that it is cultural anthropology exclusively that interested him, and that only in so far as it touches questions of man's pre-cultural stage and the culture development from this to higher stages.

We, furthermore, will see that his investigations deserve the name "scientific" to the same extent as certain modern anthropological, ethnological, economic and sociological theories built up on a purely metaphysical basis, are permitted to be labeled by that term. When Meissner states in his second volume of his recently published book *Babylonien und Assyrien*,

Der zweite Band der Kulturgeschichte Babyloniens und Assyriens handelt von der Wissenschaft. Diese verdient ihren Namen aber nicht in dem Sinne, sondern sie ist rein theologisch

this statement is undoubtedly true from the moment that the cultures of the Sumerians and the Akkadians were fused, but not for the period when Sumerian thought was still uncontaminated with Semitic ideas.

Until recent times the hypothesis originating from the German economist Friedrich List (1789-1846) was maintained that man at first at the lowest step of culture was engaged in hunting. But at this stage he also learned to tame or domesticate some of his prey in order to secure some kind of economic surety. This was supposed to give rise to the next period in the culture history of man, the period of the shepherd, which in turn again owing to the increasing numbers of population gave rise to agriculture as the basis of every other phase of higher culture life. We shall see that this "*Dreistufenschema*" agrees completely with the Sumerian viewpoint, which was gained by the Sumerian thinker by the same process of abstract thinking based on insufficient observations as it is gained and elaborated by his modern colleague.

The Sumerian was fortunately situated to gain information about primitive life. In fact, he could for some time carry on his observations right at home. And he appears to have been a keen observer. His observations were valued so highly that at a later period they were even incorporated in various literary texts. So, for instance, in the Gilgamesh epic where genuine Sumerian cultural possessions clustering around the personification of Enkidu and Gilgamesh were retained as a kind of prologue to the epic itself.

We are too little informed as to racial movements antedating the Sumerian and early Akkadian periods. Were there people who entered the country prior to the Sumerians and the Akkadians and settled among the neolithic indigenous population? There are certain faint indications in the remains of Sumerian culture which point to a pre-Sumerian element that was non-Semitic.

In the Epic a certain type of foreign settler, non-Sumerian and non-Semitic, appears in the personification of Enkidu, similar to the giant Alban, the eponymous ancestor of a people who invaded Britain. Enkidu, who came from the mountains, had gone about naked; his body was covered with hair, his broad face is bearded, curls are protruding at the side of his head. He had lived with the creatures of the field, and his life had been one of savagery. The story of Enkidu is not

a tale to illustrate the evolution of man's career and destiny, how through intercourse with a woman he awakens to the sense of human dignity, how he becomes accustomed to the ways of civilization, how he passes through the pastoral stage to higher walks of life, how the family is instituted, and how men came to be engaged in the labors associated with human activities (Jastrow).

but, as stated originally represents a type of foreign settlers who entered the country at a stage when, according to the syncretism of the Epic, the transition from the small rural settlement to the town community had already been accomplished. The town dwellers were no doubt impressed by the hairy and powerful invaders who made their abode outside the towns and they soon permitted the newcomers (owing to the defeat of the former) to

settle among them in the towns, to assimilate their culture and to intermarry with their own women. It must be remembered that the Epic preserves traditions of extreme antiquity in precisely the part which deals with Enkidu and Gilgamesh together, and the events treated paint in lively pictures the vicissitudes of the life of the people. What Jastrow read into the account dealing with Enkidu may have been, to some extent, also read into it by later Babylonian generations, but it was not implied in the original account when this part of the Epic was still independent and had not yet been used as a kind of prologue to the Epic proper.

From such considerations all difficulties also vanish which force the faulty supposition (so Jastrow) that Enkidu is merely a reflex of Gilgamesh. And as Enkidu represents invading foreigners of a low cultural niveau, so Khumbaba seems to contain allusions to Semitic invasions from the West or, as is more likely, invasions from the eastern Zagros chain.

The Epic, like all the great literary productions of pre-classical antiquity, grew, new elements were added to old ones and these again, in order to fit into the new thought, were somewhat changed, so that it is not always clear what constitutes older and what newer elements, but this much is certain that the part dealing with Enkidu preserves old observations of low-cultured invaders of the country.

The people represented by Gilgamesh are pictured in the Epic as town dwellers. The likeness of Gilgamesh and Enkidu seems to indicate a fusion of the two racial elements. If Gilgamesh does not represent either the Sumerian or the early Akkadian, then we might suppose that he represents the original indigenous population of the land. But this is excluded from the mere consideration of the seal-cylinders (see below). It, again, is more likely that Gilgamesh represents an earlier type of invader, who, in the time when the Epic was formulated, had advanced already to some kind of municipal organization before the Sumerians arrived. This, of course, is uncertain. When it is stated in the Epic that Gilgamesh and Enkidu are brothers, born in the same place, it can only be harmonized on the basis that after the fusion had taken place, both ethnic elements continued and multiplied in the same locality.

As stated, then, the Enkidu story is a very old account of the invasion of barbarous hordes to which later other traditions and myths were added and the whole, under Akkadian influence, was cast into a religious and ethical frame, in which Enkidu changed into the figure of a Hercules and even into that of an Adam or first man.

On the old Sumerian seal cylinders Enkidu is represented with animal hoofs or with the horns of the bison. Gilgamesh, on the other hand, is seen on the earliest seal cylinders fighting a bison; but a succeeding period exchanged the Elamite bison for the Mesopotamian water-buffalo. When both, Enkidu and Gilgamesh, are represented together, Enkidu fights the lion and Gilgamesh the buffalo or the bison. How very old this motive is, becomes clear from the fact that outside of this group of seal cylinders the fat-humped zebu ox, which was descended from the South-Asiatic *Bos sondaicus* and which was introduced into Babylonia via India, was already domesticated here together with a humpless kind in the Sumerian period. We, therefore, stand here, where the bison is introduced on the seal cylinders, on prehistoric ground. The fight of both men with wild animals would indicate that both belonged to a hunting period, and this taken together with what we know from the Epic would seem to show that it was Gilgamesh, or rather the Gilgamesh people, who first invaded and settled the country, followed later by the Enkidu tribe. The hoofed Enkidu which simply marks the period when Enkidu lived with animals and much like an animal, was never interpreted by the early Babylonians as corresponding somewhat to the hipopodes, a class of "portenta" of medieval ethnology.

Enkidu and Gilgamesh, we may be sure, represent pre-Sumerian types, mighty hunters and nothing else. This early stage attracted the Sumerians and they repeatedly tried to represent to themselves the difference of culture and the rise of culture. The *Dreistufenschema* is again and again noticeable, especially in the Didactic Poem of Creation, which is written in Sumerian and Akkadian (Cuneiform Texts in the British Museum, Part XIII, plates 35 to 37). For our purpose this text is more important than the Gilgamesh Epic for the reason that the latter is couched

in popular mythological language, while the former is kept free from every mythological adornment. The successive steps of creation are indicative of the successive stages of man's culture. The wild animals (called the beasts of the plain) were created after man, just as in the Biblical creation story in the second chapter of Genesis. Since the Sumerians in their various literary productions dealing with the beginnings of life and culture tried to interweave both the physical and cultural development with the strongest emphasis on the second, they seem, therefore, to have desired to indicate by the creation of man prior to the wild animals and every other life the fact that mankind is older than all culture.

The Sumerian was less interested in an account of physical creation; the latter he merely used as a basis for his account of the development of culture. Now, the creation of man before that of the wild animals is also stated in other texts, so that we may be sure that this was the accepted Sumerian theory. But this presupposes that the Sumerians considered primitive man to have been a hunter who sustained his life with the flesh of the wild animals. The Sumerian, however, has not come to a clear conception in regard to all the details. So for instance he omits to ask himself from what the beasts of the field lived, unless the next step in the plan of creation provides for this oversight. However, we must keep in mind that to him the essential matter was not to enter into these details of creation, but to delineate the various culture stages of mankind. In fact, it becomes more and more evident that the Sumerian had no desire to write creation stories, but delighted in stories of the beginning of culture. Of course, a creation with successive stages he took for granted, but this he used merely as a basis on which he could build up his *Dreistufenschema* theory.

According to an old Sumerian text (Barton, *Miscel. Babyl. Inscr.*, Part I, plates XVIII and XIX) on the first stage

the light-god did not yet come forth over industry, mankind who knew the land, acted by full day, bread and intoxicating drink they did not yet know, garments of cloth they did not yet know.

Whether the reference to the light-god contains an allusion to the discovery of fire-making as one of the first and most important technical means or not, must remain uncertain. Perhaps new texts will shed more light on that. How much the Sumerian's thought was limited to his geographical surroundings, so that he projected conditions of lower Mesopotamia back to primeval days is clear from the picture which he drew of man at this stage.

The people erected their dwellings in the high (?) reed. Similar to cloth they wove garments with its reed. They drank the water of the lowlands.

It was a state in which

the mother-sheep was not yet cherished, the lambs were not yet flocked; the goat did not yet exist, (but) the kind of the bison was in numerous herds. The sheep and its wool was not yet created, the goat and its kid was not yet created.

This statement is in full harmony with the Didactic Poem of Creation, because after the wild animals the conditions were created which permitted man to rise from the hunting stage to the shepherd stage by the creation of the cow, the sheep and the goat. Thus man now could live from the milk of his herds in addition to the meat of wild animals, especially the bison, which abounded in the land according to the text under consideration. But at this stage the heavenly host, the great gods did not yet know the names of the grain, of the long canal, of the pond and of the plow. *Shesh*-grain of thirty fold existed not yet, *shesh*-grain of fifty fold existed not yet.

Then Enki and Enlil caused grain to come forth in Duazag and they impregnated the field with grain (and) they gave the plow, the water dam and the sun to the steppe land.

And as Enki and Enlil had placed a protecting male deity over the herd as a patron-god, so now they establish "a goodly maiden" over the grain. This is rather interesting because in a later period the divinity of agriculture remains female (Nisaba). The Sumerian anthropologist, it appears, had somewhat similar views to those maintained by some of his modern colleagues, who attribute to woman an important role in reference to the beginnings of agriculture (see C. G. Heinrich Schurtz, *Urgeschichte der Kultur*, Leipzig und Wien, 1900. p. 241).

With the gift of grain went hand in hand the divinely willed occupation of the cultured man. Man is now fitted for the task set him at creation: divine worship. This is clearly stated in the sixth tablet of creation and in the text published by Ebeling, in *Keilschrifttexte aus Assur religiösen Inhalts*, No. 4, line 27.

In logical continuation, therefore, the text of the University of Pennsylvania Museum proceeds to state that at this stage man was taught the divine service and with it the foundations of social organizations were given. The text closes with the strophe:

houses in the plain of clay they founded, a lord they (the two protecting deities) let be unto them; they (the two deities) remained at his (the lord's) side, as their companions they remained, the companions of the people, lightening their sorrow, (their) helpers in everything.

A thought recurring for instance in the Dilmun myth and which apparently was a common Sumerian idea is expressed here in the closing line,—“Lightening their darkness,” or “lightening their sorrow!” To the Sumerian it was not unknown that with cultural progress there went hand in hand an intensified economic and social struggle as an evil concomitant which seems to have been taken rather as necessary if cultural progress should go on. The patron deities in some way were supposed to alleviate conditions, but man was not supposed to intervene. Ethics was not yet born. It was left to the last century to look into this matter more seriously and to find out whether or not the “sorrow” of the culture man is a necessary concomitant or not.

Such in outline are the anthropological speculations of the Sumerians which can be gleaned from the present material. Later discoveries may enable us to throw more light on similar investigations. The Semite, on the other hand, nipped these beginnings and instead of a cultural progress, the Sumerian view that man is to be considered as rising from a lower stage upward, he reversed the order and began to look upon the creation of man as the perfection of the universe. But in order to maintain this thesis it was necessary to regard man in his original primeval state as so perfect that no cultural development was possible. Such ideas necessarily had to lead to such questions as this: “What was it that brought man out of this perfect state (for it was realized long before that

man's being and position were by no means perfect; see here the Gilgamesh Epic—sickness—death—etc.)? ” By reversing the original position of man, where he becomes the last link in creation, the investigations drifted completely away from the anthropological standpoint and became theological. Thus about 1000 B. C., or somewhat earlier, the doctrine was promulgated that it was sin which brought man from his high estate. Then there commenced the various speculations about the culture “ages,” the “golden age,” the “silver age,” the “iron age,” etc. While the distinctly Semitic view could hold away into our own days (and is bound to continue), the Sumerian anthropological view was lost to sight until eighteenth century science again proclaimed doctrines similar to if not identical with those of the Sumerians.

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THE ARCHITECTURE OF THE AMERICAN INDIANS

BY T. T. WATERMAN

LOOKING over the distribution of different kinds of buildings erected by Indian tribes, it is possible, with the aid of inference and some imagination, to surmise what has happened in the past, and to reconstruct the story of the Indian's building arts, from the earliest times to now. The problem of how the Indian ever came to build his more remarkable works seems to be worth assailing, and I wish to assail it, making up by brevity for what is lacking in wit. Many beautiful photographs have been taken by investigators, of very sensational pieces of native architecture, which would help to make certain points clear, and would serve to make any presentation of the facts more digestible for a reader, but only a few of them can be included within the limits of this article. On previous occasions I have flirted with this present topic¹ and I wish now to propose a sort of archaeological jaunt through the centuries, to find out what the Indian did, and to view his progress, stage by stage, from his first simple beginnings in building.

THE FIRST HOUSES

When the original ancestor of the Indians came wandering over the region about Behring Strait, he evidently brought with him some very definite notion of how to build houses. This statement is easily made: but we can believe it without straining ourselves, for otherwise the original Indian could never have made the journey across the arctic wastes, nor have populated a hemisphere with his descendants after he got here. We may well ask ourselves what kind of a house he brought with him. The apparent answer is, he brought in a circular type of dwelling. The fact that

¹ Indian houses of Puget Sound; The native houses of western North America (Museum of the American Indian, Heye Foundation, Indian Notes and Monographs, 1921); North American Indian dwellings (Geographical Review, New York, January, 1924, reprinted in the Smithsonian Report for 1924).

the original type of house in the Behring Strait region was circular suggests this inference. Houses were built in a circular style when the first European explorers arrived, and nobody as far as I know has ever suggested the existence of any type that preceded the circular ones in that region, though the evidence of course remains scanty in the extreme. Taking the evidence as it exists, in the most cold-blooded way, we seem to see the introduction into America across Behring Strait, of a circular form of house, back when human history began in this area.

Lest some critic rise and shout that the Eskimo in this region build square houses of planks, citing Nelson and Murdoch, and not circular houses, I may remark again (for I have remarked it elsewhere) that these square plank houses of the Alaskan Eskimo are modern. The first white man who came into the region, the explorer Captain Cook, reported circular dwellings. His artist sketched them, both on the Aleutian Islands and on the mainland north of the Strait. The square houses of today seem to be due to contact with the Russians, for they have been in use for several generations.

My feeling is that the habit of building circular houses, introduced in this way, spread over the whole of the New World. When we glance over the two Americas, we find that circular houses are widely used even yet. We seem to see at first glance, to be sure, a sort of olla podrida of house types, round houses and square houses more or less mixed up and alternating, of a thousand varieties of form and materials. Circular houses, however, are still encountered here and there from the Hudson Bay region right away to Cape Horn. When the different forms of houses are plotted on a map, an arrangement emerges which is not exactly helter-skelter. On the contrary, the distribution of types of houses follows a sort of dim logical plan. Circular houses, namely, are without exception found among the more primitive and backward tribes, while rectangular houses are built invariably by the more progressive groups. Square houses are found in a central region, circular houses in the peripheral regions towards the Poles. This if I am not mistaken hints at a conclusion. Perhaps the circular habitation is the original or primitive type, the square houses being an afterthought or modification or improvement which came with advance in knowledge and culture.

Let us give some examples (assuming for a moment that what I have just said is true) of some of the adaptations of the "primitive" or "original" round house. The Eskimo snow house is, from this point of view, an adaptation of a primeval round dwelling. The earth lodge or semi-subterranean house of our Northwestern plateaus is another form of the same thing. So is the earth lodge of the Plains tribes, such as the houses of the Mandan and the Pawnee. So is the "tipi" of the Dakota and the Blackfoot. So is the "grass lodge" of the Osage, the "hogan" of the Navaho, and the earth-plastered "kee" of the Pima. For that matter, so is the ramshackle "wickiup" of the Paiute of Nevada. The "wigwam" of the Ojibwa is another form of the round dwelling, and so, to my way of thinking, are all other circular structures wherever they may be found, including the lodges of the Tehuelche of Patagonia, and the lunatic windbreaks of the Yahgans of Tierra del Fuego. My imagination tells me that this round form of habitation was brought into the New World by the great granddaddy of all the Indians, became diffused subsequently to the uttermost limits of things, and persists today wherever tribes have remained backward in their way of living.

SQUARE HOUSES

Dropping now into plain narrative, we may recount what happened next. As the Indian became more civilized (and this occurred in some regions at a very early date) he abandoned the round house, and took to building a square one. This was a first step forward in experimentation with the building arts.

From this point of view, the tribes of Iroquois in New York state were one evolutionary stage ahead of the Ojibwa mentioned above, since the Iroquois built rectangular structures, and the Ojibwa, round ones. The Iroquois "long house" was long ago described by Morgan. All the accounts picture the owners of these long houses as somewhat more advanced in the arts of life than their Ojibwa neighbors were. They had for example a more perfect political organization, and made better pottery, to mention only two things. All the tribes living in the southeastern and southern regions, Powhatan, Creek, Cherokee, Seminole, and the

rest, also built houses which were I think without exception rectangular, and in general these tribes were somewhat ahead of the hunting tribes of our West in the arts of life. The association of complicated and advanced ways of living with rectangular houses, the association of primitive ways with round houses, seems to my mind to be a real correlation, and by no means blind accident. All the sedentary tribes and nations in our Southwest, in Mexico, in Central and South America, including some tribes in the Orinoco basin if what I hear is correct, built rectangular habitations. In South America as in our own northern region, as we pass away from the highly advanced tribes into the region where tribes lived by hunting, we notice always a shift to circular dwellings. Speaking as briefly as possible, the area where square dwellings are found is much smaller than the area where dwellings are round, and is included within it. Square houses seem therefore to be historically later.

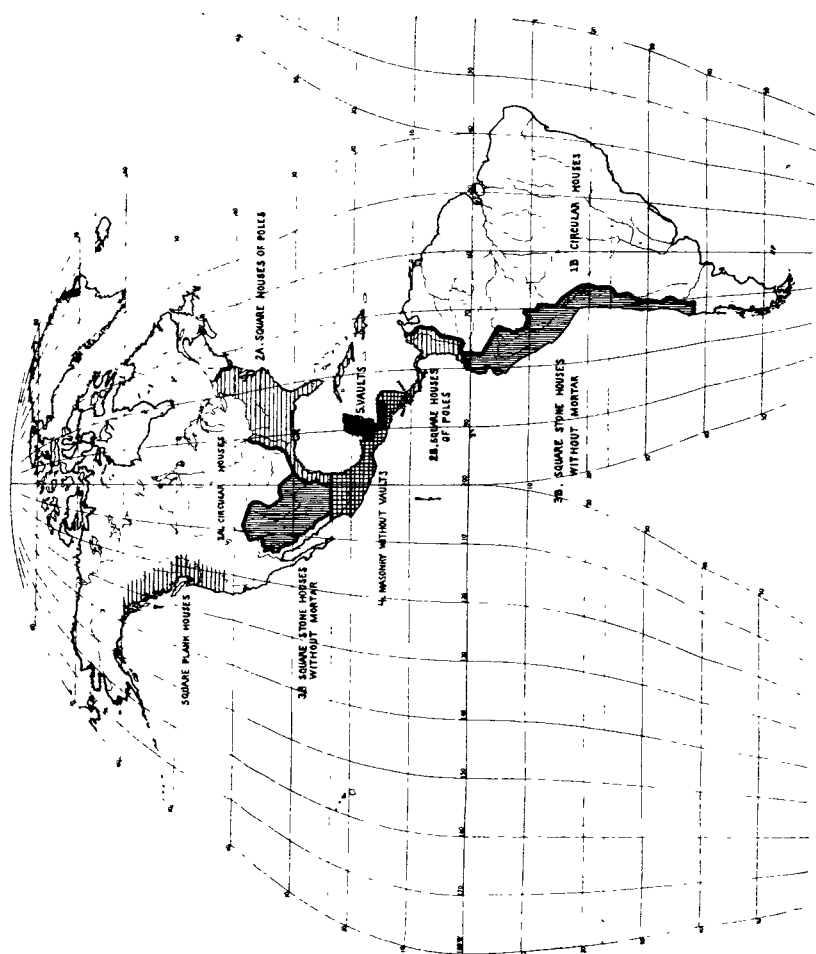
If anyone should insist on knowing where in my opinion the *square* house was invented and brought first into use, I should answer, on the Atlantic side of Honduras. Here architecture reached its most elaborate form, and seems to have had a longer history behind it. A conviction that houses ought to be rectangular seems to have spread from this focus until it reached the tribes far to the south in Chile, and, in another direction, reached the Iroquois on Lake Erie. The distribution of square houses is continuous over this middle area, though the houses become more primitive as we pass from the focus toward the periphery. Two historical processes are therefore visible, one a diffusion southward over both continents of a round type of architecture, and the other a diffusion of a later and rectangular habit of building from a focus in Central America. The second movement passed in both directions and caused the old round houses to be replaced, among those tribes which lay in the path of diffusion, by square ones.

The map which accompanies this article illustrates this point, I believe, with some accuracy. It is based upon somewhat sketchy data supplied in Wissler's book, *The American Indian*, a brief chapter in Nordenskiöld's monograph *The Ethnography of South*

America,² plus impressions picked up in general reading. The outlines of all areas on this map are much conventionalized, and the sharp frontiers between areas are imaginary. In the first place, each area in actual fact shades off into the next, and in the second place, I do not at all know the *exact* facts of distribution. The shading which represents the distribution of house types in South America is a work of pure divination. All shaded areas on the map, whatever their complexion, are intended to represent regions where houses are square. The unshaded parts of the map indicate the regions where houses are round. I feel positive that the square structures scattered from Utah to Chile are all modifications of one type of building. I feel a lively persuasion also that the unshaded area in the north represents the distribution of round houses that have their close relatives and counterparts in the unshaded parts of South America. A formerly continuous distribution of circular houses has seemingly been interrupted by the evolution of square forms of architecture in the middle region. What has been said therefore accounts in a general way for the appearance of square houses in America, and the matter so far is rather easily understood.

A second focus for square houses appears on the northwest coast of North America. The shading on the map extends vastly too far to the right. If I had limited the shading to the actual fringe of coast where rectangular houses are found, it would not have been visible at all. Here the houses are all rectangular, built in many cases of enormous planks, and put together in a most elaborate style of carpentry. The habitations in this region used at one time to be round. I have elsewhere gone into the evidence which indicates a shift here from circular to square styles. The change rose perhaps in part out of the singular ease of splitting planks out of the enormous conifers of this region, and may have been connected also with the high cultural level of these tribes in other respects; in art, for example, social insti-

² Clark Wissler, *The American Indian*, New York and Cambridge, The University Press, 1921; Erland Nordenskiöld, *The ethnography of South America as seen from Mojos in Bolivia: Comparative Ethnographical Studies*, Part 3: Göteborg, 1924.



Map showing the distribution of types of houses in aboriginal America. Outline map from the University of Chicago Press (Goode's homologous projection).

The most noteworthy point brought out by the map is the symmetrical arrangement of areas north and south of the focus of the building arts in Middle America. The region numbered 1A in the northern hemisphere corresponds with the distant region numbered 1B in the southern hemisphere. The "Pueblo" area in the south-western United States (2A) corresponds to the Peruvian-Chilean area (2B). The distribution of the square type of house made of poles in the Isthmian region remains without ready explanation.

tutions, and economic life. The map still seems to me to be fairly simple in spite of these added features. I may add that primitive American habitations have been classified from many points of view, but no other way of looking at them leads to any results that seem at all understandable. Plotting the distribution of round and square habitations leads to a result so graphic and easy to follow that there seems to be something real in it. In the meantime there are certain areas which supply examples of an historical shift from round to square buildings. This matter interests me, for every such case points like a signboard to the direction in which the building arts evolved.

A well-known and interesting area where square houses are known to have followed round houses in point of time, is our Southwest. Investigators like Kidder and Guernsey, and Neil M. Judd, report that the well-known Cliff-dwellers were preceded by Basket-makers. The Cliff-dwellers built square habitations, while the more ancient Basket-makers built themselves round huts. There are several known cases also where tribes built rectangular rooms to live in, but round structures for *religious* uses. Thus the Cliff-dwellers, to quote them again, lived in rectangular rooms, while their ceremonial chambers or *kivas* were circular. This always suggests that religious chambers are a survival of an older style of building. In many of the existing Pueblos, ceremonial chambers are still circular. The Natchez tribe who lived at the mouth of the Mississippi built rectangular wooden houses, but had a circular "temple." The latter was a wooden structure on a mound with an image of the sun in it.

I have heard somewhere that the Etruscans, living in cities and blocks of rectangular houses, nevertheless fashioned their burial-urns in the form and likeness of a round wattled hut: a fact which suggests to the archaeologists in that field that the round dwelling was an earlier type of habitation. So also the temple of the ancient goddess Vesta in square Rome was a circular building.

Such evidence seems to hint that a change from the circular to the square in architecture is a more or less common occurrence, in line with general progress in the building arts. I feel in my very soul that when the Indian left off building circular structures, and began to build rectangular edifices, he put himself in line to develop into a real architect.

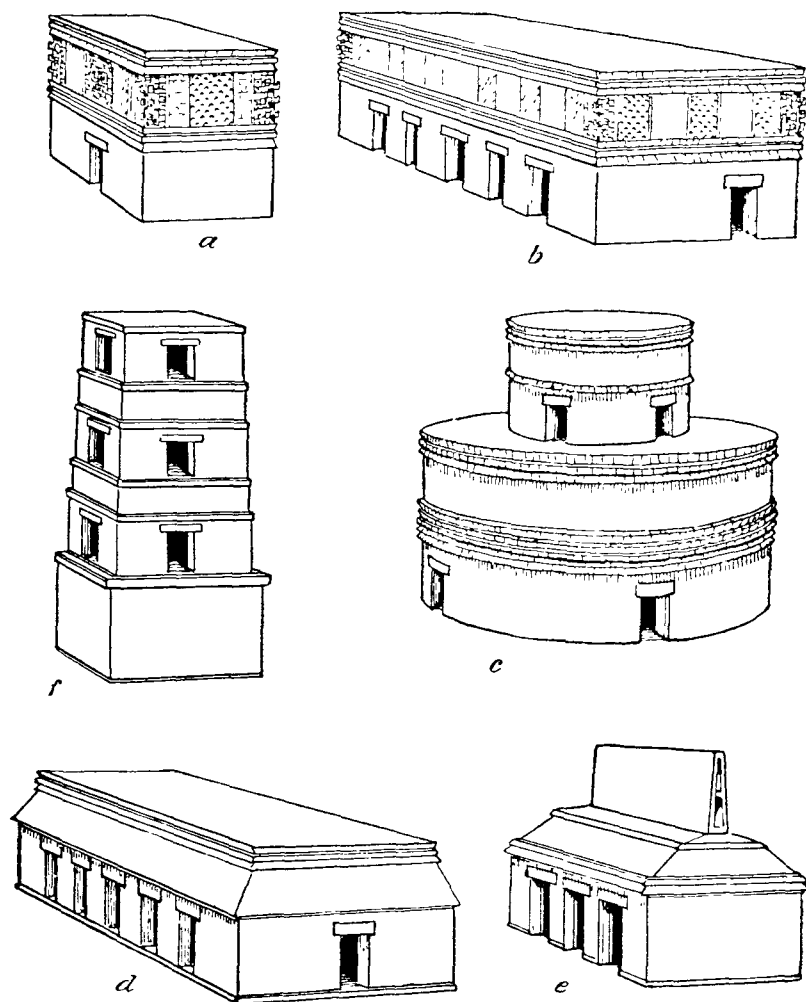


FIGURE 1. The Indian's crowning effort at architecture; examples of his striving after *form*, and specimens of *columns*, (after Holmes). Drawings *c* and *d* represent buildings at Chichen Itza, *e* and *f*, structures at Palenque.

The simple doorway is noteworthy in the first cut (*a*), the succession of doorways in *b*, *d*, and *e*, giving the effect of square piers. The buildings are not arranged in their actual historical order. The fact remains that the buildings found in ancient towns are like *a*, possessing one doorway, while numerous doorways appear in a later period. Round columns, illustrated in a cut below, appear only in the latest period. The "Mansard" roof in *e* is striking.

HOUSES OF STONE

If the shift from round to square was the first improvement in the Indian's house, what was the second? The obvious answer is, the use of stone. The occurrence of buildings made of stone is represented by the darker shading on the map. Difficulties arise in plotting this matter. The Eskimo, for example, in the eastern part of their area, build stone walls for their huts. This seems to be anomalous, for they are usually regarded as a primitive people. I do not know what to say about it, except that the Eskimo are anomalous anyhow, and in a sense they had to employ stone, for in the eastern part of their habitat (from Hudson Bay to Greenland) there is no timber. I hasten over this point, since to enlarge upon it is inconvenient, merely remarking that all the Eskimo built circular dwellings, of a very primitive sort, and I think the Eskimo themselves played no real part in the evolution of architecture above its primitive stages.

The data, aside from that on the Eskimo, suggest certain conclusions relative to the steps in the development of building methods. For instance, as we pass from the northern region of frame dwellings into the region of masonry, we encounter walls built of stones without mortar. As we pass *out* of the region of masonry into the regions of frame houses in south America, we find the same sort of mortarless walls. The cliff-dwellings of Arizona are beautiful and very familiar examples of this preliminary stage of masonry without mortar. The ancient cliff-dwellers raised walls of stone, well laid, but used mud, or nothing at all, to bind the wall together. Mud came before mortar.

THE BEGINNING OF AESTHETIC EFFECTS IN STONE BUILDING

As we pass into the region of fine stone buildings, we can watch, stage by stage, the beginnings of aesthetic development in architecture. The Indian built in stone through long ages before he developed any architectural sense to speak of. The Cliff-dwellings, again, are examples of an early stage of building in stone, showing little or no effort at architectural "effect"; at least, no conscious effort on the part of the builder. The "effect" which they have is largely due to their quaintness, and their state of ruin.

The lack of architectural sense may be illustrated by the fact that there are no windows, properly speaking, and doorways are mere holes to crawl in at. The Cliff-dweller never thought of arranging his doorways to improve the appearance of his buildings. The buildings for the most part are mere haphazard accumulations of rooms. Each structure is largely formless, except where its situation, in a cave, for example, may give it a form.

The Indian's earliest essay toward architectural effect in his structures was expended on stairways. As we deal with the edifices of outlying areas, often there is nothing to suggest any care for how the thing looked, except the long labor and thought expended on the approaches to buildings. Judging from the fairly wide distribution of examples, the Indian came rather early to the conviction that stairways can be constructed so as to appear fine and imposing. The Cliff-dweller never advanced to that stage, even. He made buildings of stone, with square chambers, but he usually provided mere ladders for climbing to his building, and for climbing about its various levels. He occasionally built stairways of masonry, but they are hardly more than ladders of stone, and in effect are leaned against the building. They give the effect of being incidental, utilitarian, and without design, except the design of enabling people to mount to their rooms. Stairways built for looks belong to a more advanced stage of the building art than the Cliff-dwellings. To find examples we must proceed to the region south of the Rio Grande. Here some ripping effects in stairways are to be seen, in some rather ancient buildings. The first examples which come to mind are those made visible by Gamio's excavations at Teotihuacan near Mexico City. Another very fine effect was obtained by the ancient builder of the pyramid at Papantla. Stairways are what the Indian architect did first, and what, to the end of his history, he did best. Few nations ever produced finer stairways, for that matter.

THE USE OF MORTAR

During the time when stairways were being elaborated, lime mortar seems to come into use. At least, the two things appear together. The area where mortar was used is continuous, and

this invention was never achieved but once, all the tribes which use it having apparently borrowed it directly or indirectly from one source. I do not know how the Indian ever came in the first place to think of making mortar, but at certain sites he made mortar of admirable quality by burning limestone, and before the end of his building operations, he learned to depend on it utterly. The ancient buildings in Middle America are more like our concrete constructions than like our masonry. There is a hearting of stone or rubble, set in liberal quantities of mortar, which makes up more than half of the bulk of the building. The wall is then evened up and covered with a thin veneer of very finely dressed stone. Such a building is practically monolithic. Even buildings of this stage of architecture, in spite of the use of elaborate foundations and even complicated embellishment, remain excessively homely and squat, once the stairways and approaches are omitted from view.

When in his latter days the Indian builder finally came slowly to the idea of beautifying his building proper, instead of beautifying the approaches merely, he hit upon one very good idea. He realized that doorways are architecturally interesting, that they strike the eye, and he began to use them for "effect". Buildings remain square and squat, but the native builder multiplied doorways, far beyond the limits of actual need or convenience, because he liked the looks of a series of portals. Such a series of entrances gives character at once to the façade of the building. He multiplied openings therefore, and carefully spaced them. At the summit of his success, he loaded on to such a building the most complicated ornament he could devise. He did not develop any sense for form in his buildings until late in his history, and even then his efforts were by no means crowned with perfect success.

In a stage of advancement where the Indian built elaborate pyramidal foundations (enormous some of them were), fine sweeping stairways with balustrades, and house fronts with fine successions of doorways, he still made his roofs and ceilings of poles or logs. An example of architecture at this stage of progress, fortunately well preserved, is to be seen at Mitla, in the Mexican

state of Oaxaca. The ornamentation is elaborate to an extreme, and very striking and successful, and the workmanship shown in the cutting of the stone is a thing to marvel at. Even with all this, the native builder never thought of giving the structures any artistic shape. One of these buildings, once the embellishment is discounted, is no more pleasing to the eye than a packing case is.

Nobody, however, has ever carried embellishment to a higher pitch than the Indian builder did. On the House of the Governor at Uxmal in Yucatan (see figure 2) the embellishment is worked out to represent five layers of ornamental design, conceived separately, but combined in one magnificent incrustation. Many of the finest buildings of this region are in ruins, utterly, for the labor and love was expended on the external veneer, which suffered first of all the parts of the building from time, the climate, and the plant life. In form these buildings are quite primitive and undeveloped, except for a few buildings erected during a rather brief period. The best the Indian could achieve in form was the making of square corners and vertical walls: but in embellishment he worked genuine marvels.

Some very good sculpture, for example, was worked into such façades as architectural ornament. Faces or heads were often carved on the ends of blocks, and the whole set into a wall by means of tenons. Some of this work, if it were found in Egypt or Greece, would be regarded as sculpture of a high order, but we are not in the habit of crediting sculpture to Indians. Some of this sculpture is really remarkable, with amazing spirit and fire. One might remark that the Indian not only failed to be an architect such as the classical Greek was, but did not even try, caring little for form and proportion, staking everything on external richness of pattern. He loaded on decoration as a pastry-cook spreads icing on a cake, with lavish hand, and loving care, and with a certain amount of taste. It is curious, considering the magnitude and the boldness of his enterprises, that he had no better sense for form.

THE GENESIS OF COLUMNS

His love of doorways arranged in series led him step by step to a rather surprising result, the invention of round columns. This surprises me, at least, for the evolution of columns is set



FIG. 2

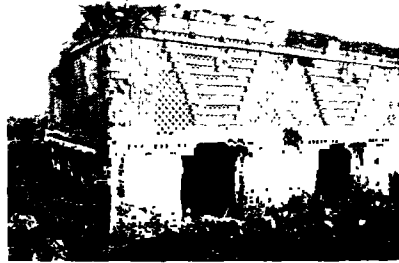


FIG. 4



FIG. 3

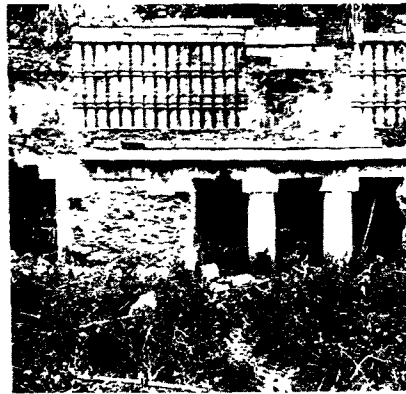


FIG. 5

FIGURE 2. Section of the House of the Governor at Uxmal, showing a concept of five layers of embellishment, and the "Maya" arch.

This is a photograph of a pen and ink drawing made by the immortal Catherwood, in 1842 or thereabout. It is difficult to say which is more remarkable, the ancient structure, or Catherwood's patient drawing of it.

FIGURE 3. A portal in the temple of Boro Budor in Java (after Scheltema).

The use of an offset arch, found also in Maya buildings, is noteworthy, as is the similarity in general style of embellishment.

FIGURE 4. A fine example of Maya decoration: the House of the Nuns at Uxmal (after Spinden).

The lattice-work effect is, I think, very artistic. It was also beloved by the builders of Boro Budor.

FIGURE 5. Round columns with capitals at Chacmultun in Yucatan (after Spinden).

Round columns, though not so fine as these, appear also on the plateau of Mexico, where perhaps they ought not logically to be looked for.

down to quite a different origin in the text books. In Egypt, too, columns seem to have evolved out of sections of wall. Narrow sections of masonry left between doorways certainly seem to have been gradually sensed by the builders in Egypt as square piers. Later on these square piers were rounded off, and turned themselves by a sort of metamorphosis into round columns. At least, so the matter looks to me. Square pillars in any case are early in Egypt, appearing in temples of the pyramid age, 2800 B.C., at a time when round columns may be searched for without success. In a later period, the Age of Nobles, 2000 B.C., square columns are replaced by round columns, fluted, and exhibiting capitals. Still later, enormous round columns with capitals representing parts of plants were built into the temples of the Empire, around, say, 1500 B.C.; the most imposing pillars, though not the best proportioned, in history.

When we turn to America with this in mind, we find similarly that the oldest cities in actual date have no columns. In Tikal, which is very ancient, we find no pillars, but we see façades with numerous doorways. In Palenque, a city somewhat later in point of time, the doorways in the typical buildings are so numerous, and the intervening sections of wall so skimp, that square piers seem gradually to have emerged. When we look at a Palenque building, it is impossible to discern whether the builder intended his structure to be a room with numerous doorways, or an open veranda, fronted with a row of pillars. The effect is exactly betwixt and between, and the observer can imagine that it is one or the other, as he pleases; or can see it in his own mind in either way by an effort of the will. In late towns such as those in Yucatan (later by a number of centuries, as the inscriptions and other data show clearly) square piers are sometimes employed, but round columns are very numerous. In some of the structures, such as one at Chacmultun, the columns are quite well proportioned, and have a finished look, quite in the Old World Style. Some of the towns, such as Chichen Itza, photographs of which have been spread abroad in the monthly magazines, supply examples of enormous round columns, most elaborate and fanciful.

What we find in cities of different age is what we would expect to see, if an *evolution* in columns were assumed. Square pillars linger along in buildings of late date, like the buttons which linger persistently on the cuffs of modern coats, though they no longer serve to button the sleeves back. The actual dating of the various buildings is a matter that need not concern us here, for it has already been entered into by a number of enterprising and painstaking students, beginning with a very fine old boy by the name of J. T. Goodman. The succession of styles in point of time, from walls with doorways, to square, and then round columns, is I think a positive fact, however it is to be explained.

Vaults

The Indian toward at the close of a long period of architectural experimentation discovered a way to ceil over rooms, and to span portals, with masonry, without the help of timbers. Through the earlier stages of his building enterprises, he depended always on a wooden beam to span every opening. Wooden lintels are an element of weakness in a stone building, for the wood sooner or later decays. Some of the best and finest of Indian structures have fallen into collapse and wild ruin, because the timbers in them have rotted out. It is noteworthy, then, that in late times (but earlier by a thousand years than the coming of Columbus and the Spaniards) the American Indian succeeded in building a kind of arch or vault. This achievement was the handiwork of the Maya Indians of Guatemala and Honduras. Later the idea migrated into Yucatan, but it never passed out of the tropical area.

The vault itself utilizes the very principle employed by the Eskimo in building a snow hut. When the Eskimo starts his igloo, he makes on the ground a circle of blocks, cut out of a convenient snow bank and trimmed to form. The next course of blocks follows the first, but each block is set a little forward or inward, so that they have a slight overhang toward the center of the hut. Course by course the blocks follow this plan, until they converge toward the top, in a sort of dome. When the opening becomes narrow toward the top, one big snowball crowns the work and the house is done, except for trimming it smooth, shovelling snow over it, and cutting a doorway.

The Maya, when they wanted to close over a room, caused the successive courses of masonry in the side walls to project toward

the center, so that one wall leans forward to meet the other. The result is by no means a true arch. It therefore goes by the name of the "false" arch, the "corbelled" arch, the "cantilever" arch, the "offset" arch, or, among Americanists, the "Maya" arch. The contrivance is of course identical in principle with the "arches" of Greece in the Homeric age, as seen for example in the Tomb of Atreus and other "bee-hive" tombs, in the Lion Gate at Mycenae, and the famous galleries at Tiryns.

The earlier "arches" in Central America, compared to the later ones in the same region, are very cautious and tentative. The engineer seems to have felt that the thing was going to collapse on him. The walls lean toward each other very gingerly, and the vaults are accordingly narrow and extremely high. In later buildings the architect became very bold, and his vaults are so low and broad, and the overhang so marked, that wooden falsework had to be put in during construction.

THE SENSE FOR FORM

During the periods when these matters were being worked out, the Indian builder was feeling his way by slow degrees to the idea that a building ought to be interesting in form, as well as in workmanship and embellishment. He did not hold this thought through any very long period. Some of the buildings erected in late times are no better than the earliest ones. At the very close of his history the Indian builder adopted the idea of the "false front" in architecture, a piece of pure vulgarity if there ever was one. We see it today in bucolic neighborhoods in our own country, where a one-story building, with its gable end on the street, has its front boarded up, to lend the shack the outward likeness and similitude of a two-storey structure. A real effort at form, however, may be seen in certain Maya structures of the so-called "Archaic" period. The ruins of Palenque, already mentioned, supply us with examples. It is curious to observe how modern the builders of Palenque were, in some of their ideas.

Let us speak for example of roofs. There are of course several possible forms for a roof. The ordinary hen-coop has a plain "gable" roof. Sometimes there arises in the bosom of our builders

an itch for artistic effect, and a desire perhaps to escape from the hen-coop idea, and the ends of the gables are accordingly cut back, making a "hip" roof. Again, the gable roof may be caused to descend to the eaves in two pitches, instead of one, a device known as the "curb" roof; a style which is agreeable to the eye, and which appears in many handsome country residences. In the seventeenth century a French architect named François Marsart hit upon the happy idea of making a *hipped curb* roof. Thus arose the so-called European "Mansard" roof. The builders of Palenque were employing this same style of roof a thousand years before it came into François Marsart's head. We see at Palenque an effort, a struggle, therefore, to give the building an outline, independent of embellishment, which will be pleasing to the eye. The effort, to be sure, was not too successful; but the spirit was there, and the builder of Palenque was an architect, or at least wished in his very soul to be one.

The story of the building arts in America therefore has a number of chapters; round houses, square houses of wood, square houses of stone without mortar, square houses of stone laid in mortar (but minus all attempts at form or proportion); fine stairways and approaches, buildings of stone with amazing embellishment, and finally, vaulted ceilings, columns, and an attempt at form. The best examples of the Indian's work probably are lost to us. Embellishment was his forte, but it can be studied only in late and probably somewhat decadent styles. In the cities of the grand period, the embellishment has simply gone to pot. It is only in relatively late and decadent structures that any embellishment survives, except for a few chance pieces.

DISTRIBUTION OF TYPES OF HOUSES ON THE MAP

A few words about the map on which I have plotted the styles of architecture may not be amiss. I have already explained that it is more a work of imagination than scholarship. This is partly due to my own defects of character and the fact that at the moment I have not access to the literature, and partly to the fact that the books themselves do not tell us a great deal, when it comes to the facts of distribution. The literature on houses is

very hard to use. There are ten or a dozen good descriptions of houses in as many various areas, the only really first class account of stone buildings being the one by W. H. Holmes.³ The map in any case is not what we might wish it to be. Apparently the data do not lead to perfectly clear and satisfactory conclusions. For example there is a region in northern South America where houses are made of poles, a region wedged in between two areas where houses are built of stone. After cudgelling my brains more or less over this, I conclude that there is no very obvious reason for it. The region of square plank houses on the northwest coast of North America is as also somewhat deplorable. Square houses there seem to have followed a period of round houses, and to have developed out of them, a fact which for its own sake pleases me. But these square structures interfere with what would otherwise be a simple and logical distribution. I take considerable pleasure in the way the two areas of masonry—minus—mortar are wedged apart by the area where mortar was employed. The device of building in stone without mortar apparently went out of style in this intervening area, and out of use. Very ancient buildings here, if they could be found or dug out of the ground, ought to exhibit the archaic building methods, without the use of mortar. The area where vaults are found, if time enough had been granted, would presumably have wedged apart the mortar area, and would have made two separate areas of it. The map suggests that the building arts developed most rapidly in the small area in Middle America which is colored solid black. In every period of history, the knowledge of how to build better houses became diffused from this area to the northward and southward. As we pass from this focus toward the periphery, we find increasingly archaic types surviving in use, until we encounter the areas of primitive round lodges in the regions about Hudson Bay and Cape Horn. Conversely, as we pass from the periphery toward the center, we are following step by step the actual evolution of the art of building. This idea I admit pleases me excessively. I borrowed

³ *The Ancient Cities of the New World*: Field Museum of Natural History, Anthropological papers, vol 1.

it from N. C. Nelson, as everybody will probably recognize without my saying it. Nelson dealt not with houses, but with types of pottery in New Mexico and Arizona. I have always taken as much pleasure in his account of his methods as if I had written his paper myself. I have not succeeded in seeing that the data concerning houses are quite conformable. This may however be due to the difficulties of the literature concerning houses, not to the actual facts. Critics who take the trouble to look at the map will very likely be pained when they observe that the architecture of Peru is represented as equivalent to the Pueblo and Cliff-dweller architecture in our own Southwest. Though I know little enough about Peru, I am familiar at least by hearsay with the gigantic character of the masonry in some of the structures there. I admit that at first glance, Sachsahuaman is quite different from Pueblo Bonito. None the less, this Peruvian architecture seems to me to find its counterpart not in the architecture of Yucatan, nor even central Mexico, but in the buildings of a region in northern Mexico and our Southwestern states. On the southern fringe of the Peruvian-Chilean area, stone buildings are reported which have a rather startling resemblance to the pueblos of our own Southwest.

THE SOURCE OF THE INDIAN'S ARCHITECTURAL IDEAS

Certain critics are ready to appear in court and swear that architectural missionaries came from somewhere and taught our Indians how to build. Some on looking at American Indian buildings shout "Egypt". Others cry "China". Of the two, China seems at the moment to be the burden of the loudest chorus. In this connection, one thinks always of the Chinese traveler who left a purported account of a visit to Fu Sang (see Vining's *Inglorious Columbus*) a land identified by many historians with Mexico. I am not familiar with the original (the thing being known to the Chinese themselves only in quotations) but I have read Vining's book, and I feel a lively conviction that wherever this Celestial adventurer may have gone, he certainly never arrived in Mexico. He is credited with mentioning nothing which he would have seen had he come to America. On the other hand he

is credited with describing mulberry trees three miles high, and silk worms eight feet long. Reducing these statistics to rods and inches, or millimeters, or any units consistent with sense his remarks still suggest Japan or Formosa rather than Mexico. In the meantime, the one architecture in all the world which looks most like that of Middle America is not the Chinese anyway, nor yet the Egyptian, but the architecture of extreme southeastern Asia, particularly Siam, Cambodia, and Java, with a few analogues in India. This raises a point which I would rather enjoy discussing, but meanwhile it ought to be remarked that a solitary voyager, a pilgrim, a castaway, or a missionary, could hardly have induced a barbarous people to plan cities, or adopt new building and engineering methods. One traveler, or a ship load of them, can have little effect on an alien culture, in any case. It is a true saying, and worthy of being noted, that two nations begin to affect each other's way of living, when there is an interchange of commodities. Missionaries accomplish little in changing externals. Trade and business relations quickly shift all the scenery on the stage.

We know quite positively that Lief Erickson, the Norseman, landed among the Indians somewhere on our Atlantic seaboard, but these chance Norse voyagers did not at all change the Indian's way of living, nor his way of doing. The sojourn of the Norsemen left apparently not one single relic behind, and we would not know that they had been here if they themselves had not told us. If any Asiatic people had really been in position to introduce a new way of building among the Indians, they would probably have introduced along with it rice, tea, and porcelain, not to mention pigs, chickens, and metals. They would have taken back maize, potatoes, and tobacco. Within eighty years after the landfall of Christopher Columbus, American plants like maize and tobacco spread over the Old World, from one end to the other and into all the corners, not merely into Spain and Italy, but into Africa and Tibet. In brief, an architecture cannot be introduced overnight by a chance arrival, while if there had been any communication, and business relations, other things than architecture would have made the jump, and the flux and the currents of ideas and arti-

facts would have passed in both directions. The fact that the ideas and inventions, the domestic animals and cultivated plants just mentioned, did not pass in either direction until Columbus came, is rather clear evidence that previous to his voyage, there had been no sufficient contact for the spread of ideas of any sort. That nobody had ever crossed the sea is a proposition that is not worth disputing. No business relations were established which took New World products into the Old, and it seems unlikely that Old World ideas could have come into the New. Such a plant as maize is of a thousand times more moment than a style of architecture, and a thousand times more likely to migrate.

It seems to my mind, in brief, that in the hasty dash we have just finished among America's ancient monuments, we have seen how one step in architecture follows another and grows out of it. Borrowing from abroad, if it occurred, must have been continuous over thousands of years. What the Indian actually did in his building operations was what he would have done if he had been feeling his way along. We witness among the aboriginal structures what seem to be experiments, and these timid essays marched only very gradually toward the finer masterpieces. The Indian built houses and other structures of fifty materials, and five hundred shapes, but when we look for evolution in the shapes and materials, stages in progress seem to be visible, and the advance from one stage to the one just next beyond it, seems to be in each case a simple matter. The one place where architecture seems to have gone ahead most rapidly seems to be on the Atlantic side of Central America. Here is perhaps the place where the Indian began first to build in stone, and where he later did his best work. I do not know why.

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THE NATIVE COUNTRY OF THE MAYA
—K'ICE INDIANS

By RUDOLPH SCHULLER

WHERE lay the original home-land of the great and widely extended Maya-K'iché-Indian Race? When, and under what circumstances did the separation of the Maya from the Huasteca, the northernmost branch of this linguistic family, take place? These two questions, important as they are, have not as yet been answered in a scientific and acceptable way.

The well-known German scholar, Sapper, who made several trips through the different republics of Central America, especially Guatemala, tried to prove, upon extremely limited linguistic material, that the Huasteca, together with the Cicomucelteca (whom he erroneously supposed to be linguistically nearer to the Huasteca than to any other of the numerous Maya-K'iché tribes), must have constituted in former times a compact group in the southwestern corner of the present Mexican State of Chiapas. Plausible reasons which might have been advanced to account for the observed segregation in later times, are not to be found in Sapper's article, and he seems to have taken for granted, without further proof, this very hypothetical northerly migration of the Huasteca across the vast central part of the republic to those regions in the northeast where, during the third decade of the sixteenth century, they were found by the Spanish conquerors. This entirely hypothetical migration of the Huasteca from southwest to northeast has on several occasions been utilized, without further critical study, by other Mexicanists to further even stranger speculations.

In the first place, it must be pointed out that, as a general principle, in defining the position of one or more dialects within a given linguistic family, it is always a dangerous proceeding to rely solely upon the evidence afforded by apparent resemblances of words in one group to those of another, many of which may even be of only secondary value.

Secondly, granted for the moment that the language of the northern Huasteca was more nearly related to the southern Maya-K'iché dialect of the Cicomucelteca than to any other dialect of the same family, this fact would in itself in no way constitute proof that the Huasteca had originally separated from the rest of the Maya-K'iché people in this far-off southwestern corner of the Maya area. On the contrary, there is much positive evidence, never taken into consideration until the present time, that obliges us to seek for the primitive home of the Maya people in exactly the opposite direction, i.e., in the north and east, respectively.

One of the most important criteria bearing upon this point is, undoubtedly, the enormous territorial extension of the old Cuexteca-Huasteca group which, from the most ancient times, seems to have lived in the region between 21-23° N., lat., and from the coast of the Mexican Gulf to 80° W. long. These thirty or forty thousand epigonoí, who are still living in a compact group in the southeastern part of the state of San Luis Potosí and in the northern part of the state of Vera Cruz, are thus only the residue, quite numerous it is true, of a people that in pre-Columbian times must have been much more numerous and occupied a still more extensive region. This is further corroborated by the fact that in many regions, for example, southern Tamaulipas and northern Hidalgo, which for centuries have been totally abandoned by the ancestors of the Huasteca-Tének, there are to be found large Indian place nomenclatures that have evidently been derived from the linguistic treasury of the Huasteca. Moreover, the results of archaeological researches tend to confirm this conclusion, for example, the occurrence of those remarkable stone idols with the well-known conical cap, the figure, often life-size, having a typical fan-like ornament fastened around the neck, as well as many other artifacts which have been excavated from the ruins of very old settlements, largely in the neighborhood of Tambacá-San Martín, Tanlacú-Tansabaque, Tamasopo-Micos, Valle del Maíz, and even north of Ciudad del Maíz and the Tantaón River, all of them on the extreme periphery of the ancient Cuexteca habitat.

From ethnological evidence we know that only a very numerous people are able to preserve their group characteristics when brought into close contact with a more highly civilized group. Thus, the ancient Nahua-Mexicans, in spite of close proximity for many centuries, did not greatly influence their Huasteca neighbors, who were decidedly their cultural inferiors. The cultural bent of this great group resisted even the powerful influence of the Catholic Church, which was exerted upon the Indians of ancient Pánuco as early as 1530. Not even the continuous intercourse of the Huasteca during the past three centuries with such alien elements as Mexicans of Spanish extraction and half-breeds of every color has produced noticeable changes in the intellectual and material culture of the present-day descendants of the ancient Cuexteca. Except for a very few vestiges of a matrilineal culture, probably traceable to the Totonaca, the modern Huasteca-Tének are genuine representatives of a very old patrilineal-totemistic cultural nucleus.

The ethnological position of the Huasteca-Tének is characterized by:

- (1) the round hut, with a conical roof, for use by one family only;
- (2) the small wooden bench or head-rest, placed under the neck when sleeping, which in former times had the very practical object of saving the numerous and complicated ornaments of the head and the neck¹ from being disarranged;
- (3) the pitiable position of the woman in the family and within the group or tribe; matrimony by purchase, either by cash or by personal service of the prospective husband for his future father-in-law or other relatives of the girl he wishes to marry;

¹ According to Father Sahagún, a small ornament made of feathers in the shape of a fan was fastened on both sides of the head near each ear, and another larger one of the same shape and made of the same material was fastened upon the neck. This positional disposition of the different ornaments in use among the ancient Cuexteca can easily be noted on many artifacts excavated in the above-mentioned old culture horizon.

- (4) the extremely despotic powers of the present-day "First Judge" or "Cacique," an Indian authority who in reality is the successor of the former powerful cacique-shaman of the primitive totemistic-clan organization of the ancient Cuexteca, and who still disposes, often very arbitrarily, of the affairs and material interests of his subjects;
- (5) the clearly recognizable survivals of a formerly highly developed cult of certain animals; continuity of descent, or affinity, in the sense of Father W. Schmidt: T'AT'AM, the first Zenzontli, the Mexican nightingale, being regarded as the first father of these Indians;
- (6) the underlying totemistic motives in their national dances, for example, in the "Tiger," "Hawk," "Caiman," "Zopilote," "Badger" dances, and others;
- (7) the strongly pronounced totemistic-patrilineal strata in the whole culture of the modern Maya-Masehual Indians of the Mexican state of Campeche,² the present very degenerated descendants of the former bearers of a once wonderfully high culture.

As influences from a matrilineal culture may be considered the following characteristics:

- (1) the custom of head-hunting, according to Sahagún, though, as I have already pointed out in another place,³ this Spanish missionary gathered his notes on the manners and customs of the Indians of this northeastern section in the capital of the country . . . that is to say, he received them at second hand and thus may have involuntarily confounded a great deal of the culture of the ancient Cuexteca with the material and intellectual culture of their matrilineal Totonaca neighbors;⁴

² This statement is based upon my own observations made during a trip across the southeastern section of Campeche from Champotón to Icaiché, situated on the border of Guatamela, and thence back to Hopelchen, in the Province of Chenes (i.e., watering-places) in 1923.

³ *La Posición Etnológica y Lingüística de los Huasteca*, Resumen. Por Rudolph Schuller, "El México Antiguo," p. 148, Tomo II.

⁴ Several of the errors made by this great Spanish missionary were followed by the German scholar Krickeberg, especially in the last edition of Buschan's *Illustrierte Völkerkunde*, and also in his article "Die Totonaken" *Baessler-Archiv*, Berlin,

- (2) the so-called house of the community (*casa de juntas*, *casa del pueblo*) which we find in the different Huasteca Fracciones (little settlements) and the Men's House (the Club) of the matrilineal culture evidently represent analogous lines of development;
- (3) Ixcuinána, the first woman, according to Huasteca tradition, invented the planting of corn (maíz);⁵
- (4) Mythological beings related to the matrilineal culture of the ancient Nahua-Mexicans are also the *gods of the pulque*, those four hundred rabbits whose origin, according to Selser and others, must also be ascribed to the country of the Huasteca.

That the ancient Cuexteca-Huasteca in pre-Columbian times were a very numerous and widely extended people is unanimously stated in the relations of the native Mexican and foreign chroniclers. *Huastecapan*, or "the country of the Huasteca," seems to have been from earliest times one of those almost inexhaustible reservoirs of men, from which the ancient Nahua-Mexicans periodically got the numerous human sacrifices annually offered during their religious feasts in honour of their numerous gods.

Returning to the main thread of my argument, it is hardly necessary to point out the practically insuperable obstacles that would render almost impossible the mobilization of a very numerous primitive people, and complicate their march across a vast and largely unknown country, certainly in former times covered with dense, unhealthy and trackless virgin forests. Every step forward could have been won only with untold hardships. There were topographical difficulties in the way, lack of food and water, and, above everything else, frequent and unavoidable wars with hostile tribes, which surely would have opposed a stubborn resistance to this invasion of the advancing emigrants in search

1918-22, where he states: "Spuren von Mutterrecht scheinen nicht vorhanden" (p. 46). I shall discuss this erroneous statement in another place. Equally inexact, also, is Krickeberg's opinion as to the origin of the so-called *juego del volador* (*volantín*). In the near future I hope to publish an article on this subject.

⁵ Tlaçolteotl, the Goddess of Corn of the ancient Nahua-Mexicans, according to Selser, seems to have originated in the Huasteca region.

of a new and better home. Delays in different places during the migration would have occurred, dependent as always upon both internal and external factors relating to the welfare of the emigrants. But such migrations leave behind them perfectly definite and ineradicable traces. Yet, the most careful archaeological investigations in southwestern and central Mexico, I believe, would fail to reveal traces tending to confirm Sapper's suggested southwesterly-northeasterly migration of the ancestors of the Huasteca-Tének Indians.

Furthermore, Sapper's alleged migration of the ancient Huasteca from that remote southwestern corner through the center of the country could not have been accomplished by small groups of people for the simple reason that a small group is neither physically nor psychically able in a given case to oppose successful resistance to other groups numerically vastly its superior. Such small groups would easily have been absorbed, or, as more frequently has happened in such unequal struggles, the men would have been killed and the women and children dragged off into slavery.

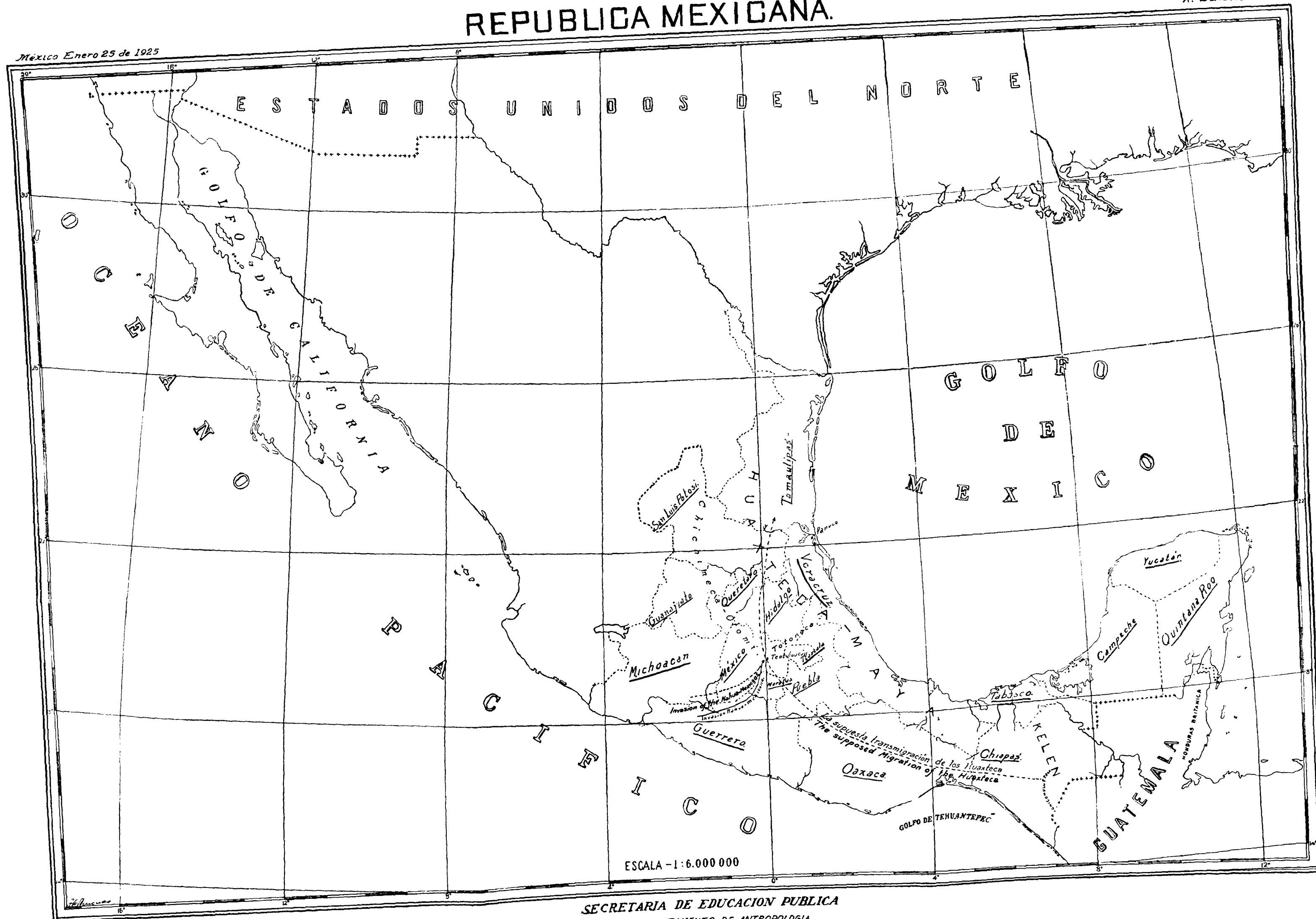
On the other hand, it is more than improbable that in those remote times large parts of southern and central Mexico were entirely uninhabited. All the accounts and reports of the early chroniclers which have come down to us unanimously agree that the Cíçimeca-Otomí were the most ancient inhabitants of central Mexico. This statement also has the very decided merit of satisfactorily accounting for a copious topographical and geographical nomenclature that unquestionably belongs to the language of the Cíçimeca-Otomí. This nomenclature, still existing in official compendia, etc., furnishes proof as to the former enormous territorial extension of the Cíçimeca-Otomí and the tribes linguistically related to them, especially in southern and central Hidalgo, in Querétaro, in Guanajuato and in San Luis Potosí, where they have been, and partly still continue to be, the southern and western (i.e., northwestern) neighbors of the Huasteca-Tének.

On the other hand, from the toponymy of Cíçimeca-Otomí origin there can easily be reconstructed their former widely extended habitat. A glance at the accompanying map shows

REPUBLICA MEXICANA.

R. Schulte

México Enero 25 de 1925



how the Cičimeca-Otomí in the form of an arc, partly surround the habitat of their Huasteca neighbors.

There can not be the slightest doubt that the Cičimeca-Otomí must have been expelled in very early times from the so-called *meseta central* and adjoining parts of central Mexico, doubtless owing to the invasion of this region by the Nahua-Mexicans. Yet, culturally speaking, the Cičimeca-Otomí do not appear to have been visibly influenced by their more highly civilized conquerors and expellers. Later on they may well have been brought under tributary conditions, but even this closer subjection to the ever increasing power of their Nahua-Mexican overlords does not seem to have had any influence whatsoever on the spontaneous development of their culture. This being the case, it is evident that this march of the ancestors of the Huasteca Tének from the remote south across the center of ancient Mexico, as suggested by the German geographer Sapper, would have come to a halt at the borders of the primitive home of the Cičimeca-Otomí, and every attempt to break through here would have been without avail.

Very closely connected with the separation of the Maya people from their northern kindred, the Cuexteca-Huasteca, I feel, is the story of the pre-Nahua-Mexican inhabitants of the *meseta central*, the progenitors (?) of those people who built the Pyramid of the Moon at San Juan Teotihuacán (i.e., "where the gods used to assemble"), which, in later times, became the Mecca of the ancient Nahua-Mexicans. Dr. Manuel Gamio, under whose direction the greatest part of the excavations at San Juan Teotihuacán were carried out, and especially the reconstruction of the Pyramid of the Sun and the Temple of Quetzalcoatl, seems to be inclined to bring the Cičimeca-Otomí into connection with this once great cultural center.⁶ Indeed, in one place he states explicitly: "*los primeros pobladores de Teotihuacán fueron los Otomíes.*"⁷

⁶ La Población del Valle de Teotihuacán (Secretaría de Agricultura y Fomento. Dirección de Anthropología. Poblaciones Regionales de la República Mexicana.) Tomo I, Vol. Primero. See "Introducción," p. 8.

⁷ *Op. cit., loc. cit.*

Professor Beyer, on the contrary, believes Teotihuacán must already have been abandoned when the Nahua-Mexican tribes settled in these regions of central Mexico. He also has pointed out cultural relations between Teotihuacán and the Totonaca Indians.⁸ The chronicler Torquemada,⁹ relying upon an old Indian tradition, refers likewise to the sojourn of the Totonaca at Teotihuacán. Seler, however, does not seem to attach much importance to this obviously very old legend. Yet, be that as it may, without entering into purely fanciful speculations,¹⁰ we can safely say that the invasion of the Nahua-Mexican tribes must have taken place in very early times and, probably, from the region later known as the Marquezado-Morelos; and further, that a logical and natural consequence of that invasion must have been a radical change in the ethnic and linguistic picture of the *meseta central* and adjoining parts.

One result was the successive expulsion of the primitive inhabitants from the center of the tableland, a great part of them surely having been pushed down toward the Atlantic coast. Let us note, however, in passing, that the complete occupation of those central parts of México by the Nahua-Mexican Indians and the final dislodging of the Cičimeca-Otomí and their kindred tribes from their primitive seats, as well as the great change thus produced in the ethnic and linguistic map of central México, was one of those historical processes, the final accomplishment of which may have taken many decades; nay, under certain circumstances, its fulfillment may have required even centuries. Unfortunately, we do not know positively whether the mixture of races and culture also happened at this time or not. Here we have another obscure problem in the history of the Indian groups of central México which perhaps can never be satisfactorily solved.

⁸ *Op. cit.*, p. 275; see also p. 274. And lately again in his paper "Sobre algunas representaciones de antiguos totonacas," *Anthropos*, XVIII-XIX, p. 257.

⁹ Cf. Ceballos Novelo and Ramón Mena, *La Población del Valle de Teotihuacán* p. 69 and p. 293.

¹⁰ As may be noted, for instance, on almost every page of Walter Lehmann's work "Zentral-Amerika." The so-called evidence, so far as I can see, totally erroneous, brought forward by Lehmann in order to prove the origin of the Mexican and Central American high cultures, must be discussed in another place.

Returning now to the subject of this paper, the original homeland of the Maya, I think that it may be accepted as proved, that when the former inhabitants of the *meseta central*, the Cìcimeca-Otomí, were dispossessed of their ancestral homes by the Nahua-Mexican tribes and driven off the *meseta central* down into the region bordering the Gulf of Mexico, largely the present state of Vera Cruz, this great shifting of people forced a deep wedge into the Maya, who at that time were living as a compact group along the Gulf coast in close proximity to their kindred, the Huasteca, and this movement opened up a wide breach between these two groups of the great Maya linguistic family which has never since been closed.

As among the primitive inhabitants of the *meseta central* and adjoining regions, in addition to the Cìcimeca-Otomí and others, there must also be included the ancestors of the Totonaca. This raises another and highly important question, namely, as to what was the pre-Totonacan population of northern Vera Cruz, and this question is one for the archeologists to answer. Unfortunately, the greater part of this state, from an archaeological point of view, is almost entirely unknown.

However, there can be no doubt that the wedge driven into the Maya-Huasteca by the Totonaca (and others?) later on must have been enlarged by the Nahua-Mexicans themselves, when they, too, moved toward the center and the south of the present state of Vera Cruz. It is even more certain that the separation of the Maya from their Huasteca relatives took place *before* the development of the Maya high culture; and, finally, it is probable that the Maya-Huasteca before their separation must have represented a uniform ethnological group, with a patrilineal-totemistic structure.¹¹

In southern Yucatán and adjoining regions there thus occurred what has happened elsewhere in the life of races. The invader, culturally inferior, but numerically superior, took possession of a

¹¹ The strong indication of patrilineal-totemistic strata in the high culture of the Maya-K'iché I have already noted.

cultural complex, developing it and changing its form until it had been made to produce such wonderful temples and grandiose palaces as one sees today in Yucatán and Guatemala.

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THE MIGRATIONS OF THE SENECA NATION

BY FREDERICK HOUGHTON

THE Seneca Nation of Indians is at present divided into groups widely scattered over the United States and Canada.

The largest group occupies reservations situated in western New York. A smaller group makes its home among its kindred, the Mohawk and Onondaga, on the Grand River, in Ontario. A third group is settled far away from these on their reservation in Oklahoma. These present habitats of the Seneca are partly consequent upon migrations during late historic time, partly also upon little known but evident movements during early historic and prehistoric times.

The New York and Canadian reservations are the direct result of the hostility of the Seneca and others of their kindred toward the colonial Americans during the Revolution. At that time the home of all the Iroquois nations making up the Iroquois Confederacy was in central New York. Of these the Seneca, the western member of the Confederacy, lived in villages scattered through the beautiful Genesee Valley, and the valleys of Seneca and Canandaigua Lakes, and southward from these over the low divides into the valleys of the Chemung and the Allegheny Rivers. Detached villages existed in western New York in the valleys of Tonawanda Creek, Buffalo Creek and Cattaraugus Creek; and in Ontario some bands seem to have domiciled themselves on the Grand River at some time after they had expelled the Neutral Nation in 1651.

During the American Revolution the Seneca affiliated themselves with the English, and for four years carried on a fierce but unavailing border warfare against the frontier settlements of New York and Pennsylvania. As a consequence of this, a colonial army was despatched against them. One division of this army penetrated their country by way of the Susquehanna River, advanced northward through their outlying villages on the Chemung

River, burned these and fought a decisive battle there, then crossed the divide to the head of Seneca Lake. They followed this to its outlet, burning villages and devastating farms as they went until they reached the foot of the lake, where was the great Seneca town of Genundesaga. This they burned, thence pushed westward straight through the heart of the Seneca country. Eventually, they reached and burned the great western towns of the Seneca in the Genesee Valley.

Meanwhile, a second division had pushed its way up the Allegheny River, burning the Seneca towns as they found them, until they reached the great town of Buccaloons, near the present Warren, Pennsylvania.

These activities were carried on in the early autumn at a time when the cornfields which spread about every Seneca village were beginning to ripen. Not the least part of the activity of the colonial soldiers was directed to the destruction of these cornfields and consequently, when the colonials had returned to their homes, the Seneca, who derived their subsistence mainly from these corn fields, found themselves threatened with starvation. They were unable to secure aid from the other nations of the Confederacy, most of which had suffered similar devastation; and although several of the Seneca towns, Canawaugus, Caneadea and Nunda on the Genesee River, and Koyendage on Canandaigua Lake, had escaped discovery and destruction, these were unable to provide for the large homeless population of the other towns. Accordingly, they flocked in thousands to their allies, the English, at the nearest depot, Fort Niagara, where the English government provided for them through a terrible winter. In order to ease the burden, however, early the next spring the English commandant dispatched parties equipped with farming tools and seeds to various near-by localities. Part were sent with Joseph Brant and his Mohawk to the Grand River in Ontario. Some drifted back to their desolated fields along the Genesee River and the Allegheny River. Some established new villages along Buffalo Creek, Tonawanda Creek, Cazenovia Creek, and Cattaraugus Creek in western New York.

All of the new settlements of the disintegrating Seneca Nation

were determined directly by earlier movements on a smaller scale. The Grand River had been known to the Seneca for a century, for in 1669 they had a well established colony, Otinaouatoua, on the portage from Lake Ontario to the Grand River, and at that time this river was a well traveled thoroughfare to Lake Erie. The valleys of Buffalo, Tonawanda, and Cattaraugus Creeks in western New York had been well known to their colonists from a still earlier time and large villages had grown up before 1750 above the mouth of the Cattaraugus, at two or three points along Buffalo Creek, and on Cazenovia Creek. In the Genesee Valley the surviving towns of Canawaugus, Caneadea, Nunda, and Koyendage served as nuclei for new villages there, and the familiar flats of the Allegheny attracted others.

This forced migration of the Seneca from their ancient seat resulted in the present reservations. When the Seneca finally sold their claims to lands in western New York they exempted certain parcels surrounding and including these new settlements as well as their older villages in the Genesee Valley; and, although some of these reservations were eventually sold, those on the Cattaraugus, the Tonawanda, and the Allegheny, and at the Oil Spring still persist.

The thrifty villages, the fertile and highly productive farms and the spreading orchards of the Seneca country which, in 1779, aroused the admiration and wonder of their destroyers, were consequent upon a similar forced migration of the nation a century before. When, in the last half of the Seventeenth Century, the French King, Louis XIV, was dominating Europe, his far-reaching hand grasped at the control of America. Between his territory in Canada and that of his English rival lay the Long House of the Iroquois. At that time, as a century later, these were in alliance with the English and, with a strong grasp on the situation, Thomas Dongan, governor of New York, strove to keep these allies as a buffer against his aggressive French rivals. Of all the Confederacy the Seneca were at that time the most powerful, most warlike, and most arrogant. When, therefore, the French governor, Denonville, wished by a show of force to alienate these vigorous English allies and at the same time to punish them

for their recent overbearing behavior toward his agents, he launched a blow first against the Seneca. In a well-planned but unexpected campaign he penetrated the isolated Seneca country at Irondequoit Bay, harried the forces opposed to him, burned their four great towns and devastated their farms. So thorough was his work that the Seneca abandoned their ruined towns and trampled fields and created new homes. One large portion turned eastward and in the region between Canandaigua Lake and Seneca Lake built new towns. A second large group settled on the fertile and wide spreading flats along the middle reaches of the Genesee River. Gradually these settlements spread southward and westward. The eastern group followed up the Seneca Lake to its head, thence over the low divide to the Chemung. The western group followed up the Genesee River, passed over the divide to the Allegheny, thence down this valley until their farthest colony was well below Pittsburgh.

The towns of the Senecas when they were thus humbled in 1687 by the French, were, for the most part, grouped together in the fertile and delightful land between the Genesee River and Canandaigua Lake, mainly in what is now Ontario County, New York. These were not so much homes of the Seneca as headquarters, whence they fared forth on extended hunting and military expeditions. For two generations they had depended upon the trading posts at Albany and Quebec for their necessities, and as peltry was their only available commodity they had gradually become a hunting nation. This necessitated wide hunting grounds and scattered bands rather than the restricted farm lands and huddled villages characteristic of the nation at an earlier stage. As a consequence, hunting camps and colonies of Seneca grew up in the great wilderness about them, occupied more or less continuously by parties from the large towns. Thus it was that the colony of Otinouatoua was established in Canada in the abandoned country from which the Neutral Nation had been ousted. A village existed on Buffalo Creek in 1751, and its chief was influenced by Father Picquet to become a Christian. These were doubtless primarily bases for hunting parties, as was the village which La Salle found on the lower course of the

Niagara. All of these villages, and doubtless others, remained undisturbed by Governor DeNonville's army and became nuclei, as has been shown, for the later towns and the reservations of today.

The villages and scattered colonies, the life of which had been so rudely interrupted by Governor DeNonville, had not been long lived. They merely marked pauses in a migratory movement which had been going on for many years. Each of the four great towns of 1687 was preceded by other large towns of an earlier period, and these, in their turn, were preceded by still others, so that the period between the coming of the first traders and the desolation of the towns in 1687 is marked by a series of sites which reach back from the great towns of DeNonville's time to towns inhabited by the Seneca of a prehistoric Stone Age. This series of sites shows the movements of at least three large communities northward from the shelter of the hill country about Honeoye Lake and Canandaigua Lake to the more open lands about Victor and Lima. This movement was gradual and caused not by war as were the later movements, but by the growing strength of the nation which made less necessary the protection of the high hills, and more necessary a larger farming area. This gradual northerly movement was along the valleys of the streams, and was continued from the time the Seneca entered the Genesee Valley until it was rudely interrupted by the French.

At the time of the two great migrations of 1687 and 1779, brought about by the invasions of the French, and of the colonial Americans, their new homes were established in each case in country well known to them and uninhabited by other nations. In each case the land selected for their homes was dominated by them and, excepting the Grand River Valley, it was owned by them. Their migrations were therefore simple matters, in that no hostile nations impeded their progress. This was not so in their earlier migrations.

The entry of the Seneca into their historic seats in central New York was the end of a long continued migratory movement from the west. The sites of their prehistoric, pre-European villages form an easily traced path which plainly delineates this migration.

The latest pre-European Seneca village was at Richmond Mills, near Honeoye Lake. This village, in all probability, was occupied by the same community which later became the village of Gannounata of 1687. A hilltop village just west of Canandaigua Lake, in Bristol, similarly marks the beginning of the town of Canagora, and the Belcher site near Honeoye Lake seems to have been the beginning of Totiakton of 1687. There is no recorded knowledge of any sites in the immediate vicinity to the southward of these three sites, although the hill country about the heads of Hemlock, Conesus, and Honeoye Lakes has never been thoroughly searched for such sites. Where the immediate predecessors of these sites are, we, therefore, cannot say. In the Genesee Valley, however, to the westward of these sites, there is a series of pre-European sites which can only be of early Seneca origin. The first undoubted pre-European Seneca site on the path of the migration is at Portageville, just above the falls of the Genesee River. This is a typical hilltop fort, the embankment of which still encircles the top of a small steep-sided hill. Still earlier, and farther up the Genesee, are two sites in Allegheny County, at Belmont. Between Belmont and the Pennsylvania state line the path is marked only by small scattered sites, but west of Wellsville, crowning the divide between the Genesee River and the Allegheny River, is a site of undoubted early Seneca origin. At Bolivar, still farther west, there is a site which, though now covered with debris from oil well drilling and so unavailable for examination, seems from the descriptions given by collectors to be of Seneca origin.

West of Bolivar there is a break in the series. This may be due to the absence of sites or it may be due only to the fact that the territory has never been searched. It is not until Sugartown Creek, in Allegheny County, is reached that the pathway is again evident. That this break may be only due to our lack of knowledge seems possible when it is considered that there are three hilltop fort sites at and near Sugartown which have never before been recorded, and that one of these was unknown to the owner of the farm upon which it is situated. West of Sugartown, a fort is said by collectors to crown a hill above Little Valley, north of Sala-

manca, in Cattaraugus County. This, if it exists, and I believe that it does, has never been recorded.

West of Little Valley is the Conewango Valley. Here, crowning a high hill at Ellington, in Chautauqua County, is an undoubted Iroquoian fort. Near the foot of the hill which it crowns lies an equally undoubted Seneca village site of pre-European age. One of two forts on Clear Creek, above Ellington, is indubitably Iroquoian, and bears such a relation to the Ellington fort that it may reasonably be considered its predecessor.

Crossing the divide westward to the valley of the Cassadaga, we find at Sinclairville and Gerry a group of forts of undoubted early Iroquoian origin, whose characteristics are identical with those of the Ellington and Sugartown forts. Beyond this group of forts there is a break in the series, coincident with a lack of knowledge of the hills of the southwestern part of Chautauqua County, and no other site is known until we reach the farthest corner of our state where, on a high hill above Findley Lake and exactly on the State Line, we find a tiny hill fort. This has every characteristic which marks the more eastern forts.

Although there can be no doubt that the forts in the Cassadaga Valley and at Findley Lake are Iroquoian, it is not at all certain that they are of Seneca origin. The artifacts found on the village site at Ellington, in Chautauqua County, the site at Wellsville, in Allegany County, and the sites at Belmont, although separated by a long distance, are identical in all respects, and artifacts from any one of these sites cannot be distinguished from articles found on two sites in Ontario County, both of undoubted Seneca origin. The forts have never yielded enough artifacts to enable one to form a judgment. In our present state of knowledge the sure characteristics of Seneca sites cannot be said to extend west of Ellington. Yet, beyond this point are sites which cannot easily be attributed to any other people.

Unlike the later migrations which led the Seneca into familiar and unoccupied country, this early migration seems to have been through a country already occupied by a hostile people, through which their course led, not along easily traveled water courses, but along the crests of the highest divides, where every stopping

place must be fortified. Of this there can be no reasonable doubt. In no place is there any evidence to show that they descended into the valleys for any length of time or to establish a permanent village.

Now, it is reasonable to assume that the people who lived on the sites, who threw up the earthen wall on the crest of Ellington Hill, who fortified the hill slopes in the Cassadaga Valley, and who formed the black refuse pits in the fort above Findley Lake were not autochthonous. They came to these places, and before they came they had acquired a culture which differentiates them from the peoples among whom they had established themselves. East of Cassadaga there seems every reason to believe that they were the people to be known long after as Seneca, Sonnontouan, the Hill People. Whence came these eastward faring people? Were they always the "People of the Hills"? What was the origin of the Seneca?

The answer to these questions seems to lie with the Erie Nation. When the French priests in the Huron mission wrote of their delight on learning that there existed other nations, kindred of their Huron hosts in tongue and culture, they recorded the name of the Erie Nation. This people, which was seated along the southern shore of Lake Erie, was of Iroquoian stock, numerous, warlike, and sedentary. In 1654 the priests at Quebec recorded the events of a war which in that year was waged by the Iroquois Confederacy upon the Erie, a war which ended with the conquest and assimilation of the Erie by their ferocious kindred. At this time their most eastern village may possibly have been on Cattaraugus Creek. A village of an earlier date, but still post-European, existed at Ripley on the cliffs of Lake Erie. It is fair to assume that some, at least, of the sites said to exist between Cleveland and Sandusky are of Erie origin. Certainly, a village site at the mouth of Chagrin River, just east of Cleveland, is of Erie origin. To occupy this territory the Erie must have entered it from one of two directions, west or east, for there seems to be no evidence of any similar culture to the southward of it. If they came from the east during pre-European times they would have left a trail of Stone Age village sites east of Cattaraugus Creek,

and these would have changed to a later type of site, marked by European articles as they advanced westward. There is no evidence of any such westward movement. On the contrary, the latest Erie villages are the most eastern, just as the latest villages of the Neuter are the farthest east. Both these nations seem to have drifted eastward.

The most reasonable theory of the origin of the Seneca is that they were offshoots of this Erie nation, or of the people who later became the Erie. In the eastward movement of the Erie, or of the people who were later to become the Erie, a small body split off somewhere between the shore of Lake Erie and the foothills of the Allegheny Divide, and instead of following the shore, it crossed the Divide into the Allegheny Valley. Here they would come at once into contact with Algonkian nations then domiciled there. This party moved steadily forward toward the east, establishing small villages on the crests of hills, and for security against their Algonkian enemies they fortified these hilltops. The band grew steadily in numbers year by year and continued its slow advance eastward.

The culture which they had in common with the Erie they retained. Their arrows they still armed with small keen triangles, utterly different from the heavy notched points of their Algonkian neighbors. They retained the common Iroquoian characteristics of sedentary village life, distinct entirely from the wandering habits of the people with whom they came into contact. Their pottery still showed the bands of design common among the Erie, but, little by little, these characteristics were modified by the molding effects of their changed environments, and eventually they crystallized into a separate nation, no longer Erie, but Sonnontouan, the Hill People. Yet the habits of generations of hill-crowning villagers persisted, and to the last their villages were built upon the crests of the high hills.

Eventually, their eastward movement brought them athwart the Genesee Valley, down which a portion turned. Another band seems to have persisted in its eastward movement until they were turned by the valleys of the smaller lakes, down which they moved, and this band was so independent that at the formation

of the Iroquois Confederacy the two bands demanded and were granted two representatives in the Council.

That this splitting off of a band is not an unusual phenomenon may be inferred from the westward movement of these same Seneca at the time of the Revolution. At that time bands had pushed down the Allegheny and Ohio and had established colonies as far away from their main stock as Shenanje, far below Pittsburgh. It can hardly be doubted that under normal aboriginal conditions a distant colony of this kind, if persistent, would have gradually lost touch with its main body and become a separate nation.

BUFFALO, N. Y.

WAS HOCHELAGA DESTROYED OR ABANDONED?¹

By W. J. WINTEMBERG

WHEN Champlain arrived at what is now the city of Montreal in 1603 he found no trace of the village of Hochelaga, which had been visited by Cartier in 1535. During the interval between the visits of the two explorers Hochelaga had entirely disappeared. The disappearance of the village has led some writers to assume that it was destroyed. Sir J. W. Dawson, for instance, repeatedly speaks of its destruction as an assured fact.² In this paper I will endeavor to show that there is no certain historical evidence of the destruction of the village and that it is more likely to have been abandoned than destroyed.

The assumption that Hochelaga was destroyed seems to rest almost solely on the statement of two Indians who accompanied Maisonneuve to the mountain top, after the founding of Ville Marie, in 1642. According to the *Relation* of that year,³

Two of the chief Savages of the band stopped on its summit, and told us that they belonged to the nation of those who had formerly dwelt on the Island. Then stretching out their hands toward the hills that lie to the East and South of the Mountain, "There," said they, "are the places where stood Villages filled with great numbers of Savages. The Hurons, who then were our enemies, drove our Forefathers from this country. Some went toward the country of the Abnauquois, others toward the country of the Hiroquois, some to the Hurons themselves and joined them, and that is how this island became deserted.

¹ Read at the May, 1925, meeting of the Royal Society of Canada.

² Fossil Men and Their Modern Representatives, third edition, London, 1888, pp. 42, 44, 46, 66, 71, 74, 92, 101, 166, 447, 448. See also Rev. John Maclean's Canadian Savage Folk, Toronto, 1896, p. 327; and the following papers by W. D. Lighthall (1) A New Hochelagan Burying Ground Discovered at Westmount on the Western Spur of Mount Royal, Montreal, July-September, 1898, Montreal, 1898, p. 5; (2) Hochelagans and Mohawks, a Link in Iroquois History, The Transactions of the Royal Society of Canada, Second Series, 1899-1900, vol. 5, Section II, 207; (3) The Westmount "Stone-lined Grave" Race, *Ibid.*, Third Series, 1922, vol. 16, Section II, 73; and (4) Hochelaga and the "Hill of Hochelaga," *Ibid.*, Third Series, 1924, vol. 18, Section II, 95.

³ Burrows edition, Jesuit Relations, 22 215. See also Charlevoix, *Histoire et Description Generale de la Nouvelle France*, Paris, 1774, 354-355.

Now it will be observed that Maisonneuve's Indian informants did not mention Hochelaga or that it had been destroyed. They merely claimed that their ancestors had been driven from the country. Furthermore, they were members of the Ononchataronon tribe, who were Algonkians,⁴ although their name is Huron.⁵ The language of the Hochelagans, recorded by Cartier, was Iroquoian. The archaeological remains, found at the site, show that the culture also was Iroquoian. The Ononchataronon, therefore, if they were Algonkian, as is generally believed by ethnologists, can not have been the Hochelagans visited by Cartier, and the statements of these Indians must refer either to a time prior to the Huron-Iroquois occupation, or to a later period. The fact that an old man, mentioned in the *Relation* of 1642,⁶ claimed that his grandfather had tilled the soil and raised corn on the spot, does not necessarily imply that the Ononchataronon "were not originally Algonkians," as one writer thinks.⁷ Other Algonkians, those of Allumette island, for instance, cultivated the ground and grew corn.⁸ The Ononchataronon may have acquired their knowledge of corn culture from the Huron, for they are known to have wintered near them and probably also came into contact with them in summer. At any rate, they had evidently been familiar with the cultivation of corn long enough to give the old man of the *Relation* of 1642 the impression that his people had always cultivated it.

From what I can learn from Dawson's papers⁹ and his *Fossil Men* no evidence of the destruction of the village was discovered at the site of Hochelaga. Some, however, might say that the ashes, charcoal, charred corn and charred beans, found in the

⁴ See Relations of 1641-42, 21:117; 1642-43, 24:269, and 1646, 29:145.

⁵ See Charlevoix, *Journal d'un Voyage fait par ordre du Roi dans l'Amérique*, etc., Paris, 1774, 5:162.

⁶ Loc. cit.

⁷ Lighthall (2), 208.

⁸ Voyages of Samuel de Champlain, trans. by Charles Pomeroy Otis, Boston, published by the Prince Society, 1882, 2:69.

⁹ (1) Notes on Aboriginal Antiquities recently Discovered in the Island of Montreal, *Canadian Naturalist and Geologist*, Montreal, 1860, 5:430-449; and (2) Additional Notes on Aboriginal Antiquities Found at Montreal, *Ibid.*, 1861, 6:362-373.

refuse deposits of the site, were an indication of the destruction of the village by fire. I have heard this said of sites in Ontario; for the idea of destruction, with its associated horrors—the butchering of the inhabitants and the scalping and torturing of prisoners,—seems to appeal to the popular imagination more than the sober truth. The ashes and charcoal, as perhaps I need not explain, are merely the remains of the fires for cooking and for warming the houses, while the charring of the beans and corn may either be accidental, or, in the case of the corn at least, due to the Iroquois custom of parching the corn before it was stored.

Judging from the general lack of information respecting such a practice, it does not even seem to have been customary for the early Iroquois to destroy or burn their villages after they abandoned them. I have found only two references, both of which are of a very late period. When Frontenac, for instance, with seven-hundred French and five hundred Indians, marched against the Onondaga, the latter, considering that their town was not worth defending, on account of the fact that it had been occupied for fourteen years and that it was full time to remove to another site, burnt the town, so that the French found only the smoking ruins.¹⁰

We come now to the question: Was Hochelaga abandoned? The broken condition of most of the artifacts, found at the site, is the only archaeological evidence which would suggest that the place was abandoned. Notwithstanding the lack of more positive evidence, I believe that it is more likely that the village was abandoned than destroyed. The Iroquois are known to have found it necessary to remove their villages to more suitable locations every ten, twelve, fifteen, twenty, thirty, and forty years,¹¹ owing to the fertility of the corn lands becoming exhausted and the depletion of the fuel supply. The same causes were probably responsible for the abandonment of Hochelaga.

¹⁰ Morgan, *League of the Ho-dé-no-sau-nee, or Iroquois*, new edition, New York, 1904, vol. II, note 25 on page 194. The other reference is in Colden's *History of the Five Indian Nations of Canada*, London, 1755, vol. I, p. 81.

¹¹ See the *Jesuit Relation of 1639* (Burrows edition), vol. xv, p. 153; Champlain, *op. cit.*, vol. III, p. 161; and Beauchamp, *History of the New York Iroquois*, New York State Museum, Bulletin 78, 1905, p. 152.

There is no certain means of learning how long Hochelaga was occupied. The depth of the accumulations of refuse and the large quantity of broken pottery are uncertain indications of the length of occupancy.¹² The same quantity of debris might be left by a large population in a short period of time. We can only guess how long the village was occupied after 1535; but even if it was inhabited for twenty-five years after Cartier's visit, there was still ample time for the wooden palisade and the bark covered wooden framework of the houses to disappear through the slow process of decay, so that not a trace would remain in 1603. There is the possibility, too, that when the village was abandoned, the houses and palisades were demolished and that the material was used in the construction of the houses and defensive works of the new village.

I think it will be safe to conclude that the assumption that Hochelaga was destroyed is unwarranted by the facts and that it is more likely to have been abandoned than destroyed. But, while I maintain that there is no certain evidence of the destruction of the village and that the Ononchataronon were not Hochelagan, I admit that the statement of Maisonneuve's Algonkian informants that their ancestors occupied Montreal island and that they were driven from thence by the Hurons, is in the main true. The expulsion, however, probably occurred before the founding of Hochelaga as an Iroquoian village. While we now have very little archaeological evidence,¹³ there is no doubt that a systematic search would reveal abundant evidences of a pre-Iroquoian Algonkian occupation of Montreal island. The Algonkians certainly preceded the Iroquois in parts of Ontario and New York, and it is reasonable to suppose that they were the earlier inhabitants of Montreal island also.

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¹² Dawson (1), said: "The remains of pottery and other objects were in such quantity . . . as to indicate a long residence of the tribe which had inhabited the spot," p. 452.

¹³ Lighthall, in his paper on "The Westmount 'Stone-Lined Grave' Race," describes a method of burial which does not seem to be Iroquoian and is probably Algonkian. The late Prof. F. W. Putnam in 1857 discovered a shell-heap somewhere along the side of Mount Royal, which may have been left by Algonkians.—A Problem in American Anthropology, Annual Report of the Smithsonian Institution, Washington. 1901, p. 475.

A NEW TYPE OF CARVING FROM THE COLUMBIA VALLEY

BY JULIAN H. STEWARD

EXCAVATIONS conducted in the Columbia Valley by the University of California during the summer of 1926 have brought to light a new type of aboriginal carving, which is sufficiently unique to merit special attention. For the opportunity to do this work, we are indebted to the generosity of Mr. Henry J. Biddle of Vancouver, Washington.

The carvings comprise human, animal and geometric figures and are executed for the most part in bone, but occasionally in slate and antler or horn. The source of the material is two cremation pits. One of these, from which most of the material was derived, is situated on Miller's Island in the Columbia River at confluence of the Columbia and the Deschutes Rivers, and is associated with several Indian graves. The other pit is on the Oregon shore, about ten miles below Miller's Island, where nine other cremation pits and several burials occur. All of the pits and burials at the latter site had been rifled by relic hunters, but a thorough examination of the material remaining showed that only one of the cremation pits contained carved bone fragments. These closely resemble those from Miller's Island.

Owing to the broken and charred condition of the material in the pit on Miller's island, a large part of which had been destroyed by the fire or fused with melted sand and human bones, the carvings were badly broken and the pieces gleaned were very fragmentary.

Most striking among the carvings are the human figures, specimens of which are shown on plate I. These, with two exceptions noted below, are all done on flat bone and are notable for the accuracy and neatness of workmanship. A very definite local style with a highly conventionalized mode of representing the various features is evident. The face is essentially the same in each specimen. The eyebrows are in each case clearly defined

and continue downward into the nose. The eyes are almond-shaped and are represented by two or three concentric lines. A cheek line always appears on each side just above the mouth leaving the cheek about the size and shape of an eyebrow, but inverted. The exaggerated crescent-shaped mouth is open and grinning, with the teeth, usually in two sets, clearly demarked and the tongue appearing in the center. The headdress is unusually elaborate; often it is almost Egyptian in appearance. It generally rises to a considerable height above the forehead and is decorated with groups of zigzag lines or parallel-hatching, and is topped off, in a majority of cases, by a "comb." Figures *b* and *c* show this "comb"; in *d*, *f*, *g*, *h*, *i*, and *j* it has been present but is broken off. The headdress frequently continues down on each side of the face in narrow bands,—figures *b*, *f*, *g*, *i*, *j*. The remainder of the body has been lost in most instances, but where it is preserved it also shows a highly conventionalized type. The ribs, variable in number, stand out on each side with a breastbone in the middle,—figures *a*, *c*, *j*, *k*. The arms hang by the side and the hands and fingers, squarish in shape, are marked by simple lines,—figure *k*. (Several fragments not given in the plate show only parts of the body, as ribs, hands, or parts of the face.)

Figure *e*, plate I, varies somewhat from the usual form in the square setting of the face and in greater conventionalization. But the type of features, so far as they are discernible, is identical with the others. Part of another square face precisely similar to *e* was also found.

Figures *h* and *k*, plate I, are probably parts of one figure as the color and texture of the bone and the size are the same. The mouth and headdress, however, are missing.

The two exceptions mentioned above to this general method of carving the human figure are small pieces carved in the round,—figure *h* of slate and *i* of bone, plate II. The conventionalized style, however, is the same as in the flat pieces and merely shows adaptation to the rounded surface. In figure *h* the concentric eye lines may be seen on either side of the straight, narrow nose, with the eyebrows above and the cheek line below, and below the cheek line, part of the grinning mouth showing the upper set of teeth



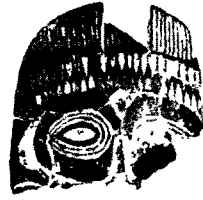
a



b



c



d



e



f



g



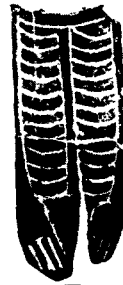
h



i



j



k

PLATE—I Bone Carvings from Miller's Island. a-j, human heads(c is of steatite); a, c, and j show part of the body with ribs; k, human body showing ribs, arms and hands. (all 3/4 natural size).

and part of the lower set to where the break occurs. Similarly, in figure *i*, the eyes appear as concentric rings, the nose is rather broader than in *h* and continues upward into the eyebrows, and part of the headdress remains above. The cheek line is lacking but part of the mouth is shown with the upper teeth and the tongue in the middle.

Of the other pieces shown on plate II, *a* and *c*, worked in bone, and *b*, in slate, may be conventionalized headdresses for the fragments of curved lines appearing below the horizontal lines in each piece suggest eyes or eyebrows. These differ, however, from the headdresses shown on plate I not only in being slightly larger but in the greater use of parallel arcs and zigzag lines for ornamentation. Figures *d* to *g* are extremely problematic. They are all of bone and are carved in the round with longitudinal lines and encircling horizontal and zigzag lines. Apparently these designs are purely geometric. Figures *j* and *k* are also of bone. The thickness of each of these pieces is about half the width; the design is on one side only. The ribbon-like pieces shown in figures *l* and *m* are probably parts of one strip, with the intervening piece lost. These, too, are of bone and are carved on one side only.

The figures on plate III are all of bone. Figure *e* is in the form of a small rosette, slightly hollowed on top (part of the rim is missing) but broken off at the stem. It suggests a conventionalized flower. Figure *d* is somewhat more deeply incised than the other fragments, and is probably purely geometric in design although the concentric rings on the upper piece suggest eyes. The two fragments shown probably fit together in the position indicated. Figures *a*, *b*, and *c* are all of solid bone, probably whalebone. The totemic-like face on the flat piece shown in figure *a* is carved on both sides. Figure *b*, also flat, is carved on one side only. Figure *c*, which is round in cross-section, has a small, crude face near the bottom.

Text figure 1 is the only piece shown from the cremation pit on the Oregon shore mentioned above. It is in the possession of Mr. Luhr Jensen of Dee, Oregon, who kindly permitted me to sketch it. It is of bone, carved on both sides and is highly similar to figure *a*, plate III.

The interpretation of these figures is somewhat difficult. Some elements of the art style can clearly be traced to neighboring areas. For example, the faces on figure *a*, plate III and the text figure 1, undoubtedly show connection with the totemic figures of the Northwest Coast art. And figures *d* to *g*, plate II, suggest hornspoon handles from this region. The zigzag lines and diamonds, figures *l* and *m*, plate II, are suggestive of Plains or Plateau



FIGURE 1. Handle of whalebone war club. ($\frac{2}{3}$ natural size) Found 5 miles above The Dalles Oregon. (In the possession of Mr. Luhr Jensen of Dee, Oregon.)

art, although the zigzag may also be traceable to the Northwest Coast. The human figures, however, stand out unique both in style and in workmanship. It is true that the use of concentric rings for the eye-form suggests Northwest Coast art; but if the whole style arose from the Northwest Coast art or any form of it, it has certainly had a high and very divergent local development.

In some ways the human figures resemble much cruder human figures occurring in this region. The continuation of the nose upward into the eyebrows is a very common feature both in pictographs occurring throughout the Columbia Valley and in



a



b



c



d



e



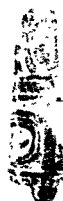
f



g



h



i



j



k



l



m

PLATE II.—*a* and *c* (bone) and *b* (slate) are probably headdresses; *d-g* (bone) are problematic; *h* (slate) and *i* (bone) are human heads, *j* and *k* (bone) are probably gambling sticks; *l* and *m* (bone) are problematic, (all 7/9 natural size.)



a



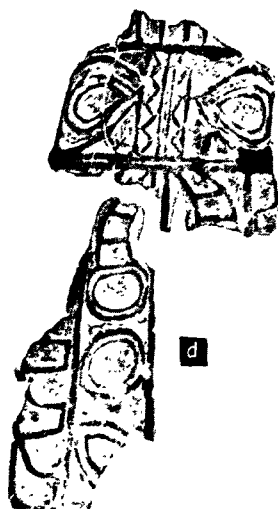
b



c



e



d

PLATE III - *a*, *b* and *c* are probably whale bone clubs; *d* is a geometric design deeply incised on flat bone, *e* is a "rosette" carved in bone. (all 2/3 natural size).

occasional stone carvings. Text figure 2 shows this feature in a stone statuette from near Lyle, Washington. See also, figure *b*, plate III. It also appears in several stone pieces described by Harlan I. Smith,¹ particularly one from twenty miles below Portland and another from Courchan Gap. In the former, there is also a slight indication of ribs. Many of the crude wooden effigies from the Columbia Valley, used either as grave posts or



FIGURE 1. Stone statuette from near Lyle, Washington. (Photograph by courtesy of B. C. Markham, The Dallas, Oregon.)

house ornaments, bear ribs. The zigzag lines of the headdress may also find a slight parallel in the headdress of the stone statuette from Lyle, text figure 2, or in the radiating lines occurring in many of the human figures in pictographs and petroglyphs in this region.

But the only true parallel I find to these figures is a single piece described by Smith from a grave near Tampico, Wn., in the Yakima Valley,² which is, however, slightly cruder, especially

¹ Smith, Harlan I. *Archaeology of Georgia Gulf and Puget Sound*, Mem., A.M.N.H., v. 4, pt. 4: 424-431.

² Smith, Harlan I. *The Archaeology of the Yakima Valley*, Anthro. Papers of the A.M.N.H., v. 6, pt. 1: 100-105, 127-128, fig. p. 133.

in the carving of the face. The ornamentation of the figure from the Yakima Valley, he believes, is traceable to Plateau influence. The zigzag lines of the headdress are thought to be conventionalized feathers, while the various groups of parallel hatching may be hair ornaments, possibly of buckskin, with decorations of dentalia and other shells. The portions of the headdress appearing on each side of the face, giving in some instances, an Egyptian cast, may either be decorated hair rolls or hair done up in buckskin. It is also possible, however, that the headdresses may represent something similar to the animal scalp headdresses formerly in use among the Nez Perce.³ I find nothing, however, which gives any clue to the meaning of the "comb."

The use of the human figures is purely conjectural. While they may be effigies, I see no reason for assuming any other use than one of pure ornamentation. They may have served a purpose similar to the larger wooden figures mentioned by Lewis and Clark which were hung up as ornaments in the house or placed in the graves but apparently "not worshipped."⁴

I am very hesitant at hazarding a guess as to the meaning of the small pieces carved in the round shown on plate II, figures *d* to *g*. In some ways they suggest the horn-spoon handles of the Northwest Coast, and the concentric circles appearing at the top of figure *d* may be part of a totemic figure. On the other hand, the zigzag lines connect it rather with Plateau art. It is conceivable that these are parts of the headdress belonging to such faces as appear in figures *h* and *i* on the same plate.

Figures *j* and *k*, plate II, are probably bones used for the hand-game or guessing game. Other fragments of this type show that these bones were probably paired. Data presented by Stewart Culin⁵ show that paired bones of this size and general shape were used for the hand game throughout the entire western part of North America, and that in many instances that material was solid bone, the pieces varying in length from $1\frac{3}{4}$ " to $3\frac{3}{4}$ ". The

³ Spinden, H. J. The Nez Perce Indians. Mem. Amer. Anthro. Assoc., v. 2, pt. 3: 229.

⁴ Lewis and Clark. Original Journals of the Lewis and Clark Expedition, 1905, v. 3: 166, 176, 178-179, 183.

⁵ Culin, Stewart. Games of the North American Indians. Ann. Report, A.B.E., v. 24, 1907: 44-335.

bones shown here are $2\frac{3}{8}$ " and $2\frac{1}{2}$ " in length, respectively. While it was a widespread practise to ornament the sticks by carving or painting, I find none so elaborately carved as these nor with precisely this design. It is conceivable that these sticks were used in the dice game, but as a rule the sticks for the dice game are of wood and are considerably longer than those for the hand game.

The pieces shown in figures *l* and *m*, plate II, resemble Plains or Plateau art rather than Northwest Coast art. They are so thin and fragile that any practical use for them can hardly be imagined and it is more likely that they were purely ornamental.

Figures *a*, *b* and *c*, plate III, and text figure I are very likely fragments of war clubs made of whalebone. Large, spatula-shaped clubs of whalebone were very common on the Northwest Coast, particularly on Vancouver Island where the handles were carved, most frequently with the totemic figure of the eagle or thunderbird.⁶ Text figure 1 and figure *a* plate III are highly similar to the carved handles of these clubs. Figure *b* may be the lower end of a club, for many clubs were decorated with an inverted face of this type on the lower end.⁷ On the other hand, the general shape of the fragment rather suggests that, if part of a war club, it was the handle. Again, it may have been simply an effigy. If figure *c* is part of a war club, it is more akin to the type used in the interior of British Columbia. Two clubs from near Kamloops, B. C., shown by Smith are circular in cross-section and are carved with faces similar to this.⁸ In these two, however, the face appears at the top of the club.

Figures *d* and *e*, plate III, are probably purely decorative in purpose. Figure *e* slightly resembles a pipe fragment, but is made of bone and is not drilled through. Figure *d* seems to show admixture of Plains or Plateau and Northwest Coast art.

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⁶ Smith, Harlan I. Archaeology of the Gulf of Georgia and Puget Sound, Mem. A.M.N.H., v. 4, pt. 6: 403-412 (section by Boas on "Whale Bone Clubs").

⁷ Smith, Harlan I. An Album of Prehistoric Canadian Art. Canada Dept. of Mines, Bull. 37, Anthro. series, no. 8; plate XXII, fig. 3, plate XXIII, fig. 4, plate XXIV, figs. 1, 2.

⁸ Smith, Harlan I. Archaeological Collection from the Southern Interior of B. C., Government Print. Bureau, Ottawa, 1913.

FACTS AND THEORIES CONCERNING PLEISTOCENE MAN IN AMERICA

By PINY EARLE GODDARD

THE hour has at last arrived for an extensive reorganization of our conception of the peopling of America and of secondary movements on the two continents. That human beings were living in North America during Pleistocene times is no longer open to doubt. Worked flints lying in undisturbed Pleistocene formation under a fossilized skeleton of an extinct species of bison must mean that men were living in Texas at that period.¹ The exact division of the Pleistocene in which this bison became extinct and the stratum was laid down may be left for future settlement. This find is but the confirmation of numerous other ones all pointing to the same conclusion, but against which some objection has been raised.

In reality all these years the scepticism should have been in the other direction. Linguistic evidence has been in existence for nearly a century which made the peopling of America in recent times improbable. Such great diversity of speech calls for many milleniums. The cultural evidence is in the same direction. The land-bridges were almost certainly in the north and in all probability at the Northwest, that is Behring Strait. The crossing there is now possible for men in small boats or in winter on the ice. But under present conditions it is hard to imagine the crossing of Behring Straits and moving by land down over Alaska of a sufficiently large number of people to account for the present population of America. People travel that region only by boats in summer or with sleds in winter. That Alaska was more inviting for settlement or that travel there has been easier since the retreat of the last ice-cap is improbable. As far as a large movement through Alaska is concerned the Pleistocene did not end 30,000 years ago when the retreat of the ice in Nebraska may be supposed to have begun,

¹ Definite Evidence of Human Artifacts in the American Pleistocene, Harold J. Cook Science, Nov. 20, 1925, pp. 459-460.

but when that retreat had reached the far north. How long that took we may sometime know, for in many localities the years are easily counted in the clay deposits left by the retreating ice.

According to the older view a sufficient number of people crossed Behring Straits to furnish a hundred or more independent linguistic stocks already differentiated in the Old World; not a single pair as pure biology would require. These people slowly moved southward through North America, not waiting to populate it densely, into Mexico, along the narrow neck of land forming the isthmus of Panama, down the coast of South America to Patagonia and arrived there in time to be contemporary with an extinct ground sloth. At a somewhat later time, maize was domesticated together with many other native American plants, and only after that the great civilizations of Peru, Yucatan and Mexico Valley grew up.

The whole conception is, and has been fantastic, for the time allowed was much too short. People who are inclined to be critical and conservative should have doubted that man was recent, and have thrown the burden of proof that the finds in Pleistocene formations were not to be accepted on those who raised doubts concerning them. There is nothing that makes the man who stands out for man's being recent, while certain proof to the contrary was lacking, more sound and scientific than the man who demands ample time to explain the conditions as we knew them.

Two objections to the antiquity of man in America have usually been raised. First, skulls and other remains found in old formations were condemned if they did not show a low order of mankind. This belief was based on finds in central and western Europe. Other mammals have survived from Pleistocene times with little change, why not man? The second objection has been that man must have come with a neolithic horizon and the neolithic horizon in France is post-glacial. Again the reasoning was unsound, because the center of cultural development was not likely to have been France but far to the east and south, perhaps in Africa or southern Asia.

Under the great ice cap, there are almost no known remains of a people previous to those now inhabiting the country. Prac-

tically all evidences of man were wiped out by the ice. At the southern borders of the ice finds have been made from time to time. The petrified human femur, with cuttings on it, taken from the Trenton gravels may now be accepted as of the origin indicated. The Argillite culture described by Skinner and Spier is now referable to the Pleistocene. There are finds as well in Nebraska. South of the ice in Texas and Florida finds have been numerous. It was there that man could live during the Pleistocene and his remains endure. The material from the caves of Kentucky and Arkansas may well be very old. It is in the Southwest, another region which escaped the ice, that the largest and most definite archaeological record of man in America has been uncovered. There is some reason to suppose that the bow and arrow were not known in America by the earliest people. The Basket Makers seem to have used only the spear thrower, with an appropriate dart. Harrington found darts, not arrows, in certain of his Arkansas caves. Curiously enough the two flints found below the bison in Texas were too large to be arrow-points. The bow may have been invented in America or have reached in a second movement of either people or culture.

But at last we know man was here in Pleistocene times. The period that has usually been assigned must be doubled at least and probably multiplied by ten. How shall we readjust our theories? Man came across with the other mammals of Old World origin: the horses, the elephants, the camels, when there was an ample land-bridge and when both Siberia and northern North America were enticing in climate and sources of food. When the ice advanced, if not before, men and the other animals moved toward the south, and due to a great reduction of exposed land they were perhaps forced to cross into South America. During the last glaciation these people were confined to the tropics where they were compelled to seek an increase of their food supply. Dense populations, and *only* dense populations produce highly organized civilizations. Maya civilization is now given but a few milleniums but the Maya, at the founding of the cities now in ruins, were an advanced people with a calendar system and a method of recording it graphically. They were in no sense primitive.

Just south of the ice in North America there was a sub-arctic flora and fauna with man included. At that time man hunted bison and probably caribou. As the ice retreated slowly, imperceptibly, the fauna followed it, especially those animals adapted to a sub-arctic climate and flora and also those men who were accustomed to live on these animals.

To the south other animals and men, who if not already agricultural, were accustomed to the more temperature regions, remained behind. The withdrawal of the ice produced a migration toward the north. The Athapascan-speaking peoples divided. Those who were living on caribou went north with them, and are now in the Mackenzie and Yukon valleys, where they still hunt the caribou and catch fish. The Beaver, also Athapascan, on the Peace River until recently chiefly hunted the wood bison. Others speaking related dialects remained behind in Kansas, Oklahoma and western Texas. Siouan people moved in to fill up the gap left between these separating tribes. They too left remnants behind in the south, the Biloxi and the Catawba. On the west of the Rocky Mountains Shoshonean peoples moved northward nearly to the Canadian border. On the Atlantic coast there is some evidence that the Eskimo were once far south and that they withdrew toward the north followed by the Algonkian peoples who also at a later date pushed westward toward the Rocky Mountains.

The movement of the Iroquois was probably much later. The Algonkian movement toward the south along the Rocky Mountains may have also not been completed until a few millenniums or even centuries ago. Also the movements into Labrador were late. But there the ice age has only recently ended and the country does not yet furnish an easy living.² In broad outline, something of this sort almost certainly happened.

² It may well be that California and the Pacific Coast north toward Puget Sound was available for human occupation long before the ice disappeared at the same parallels east of the Rocky Mountains. A warm ocean current would have produced such a result.

Much of the above is speculative, but some hypothesis is necessary to clarify the new problems that will immediately arise under the new conditions of a long occupation of America. A good hypothesis is one that explains many facts and is contradictory to none.

The measure of linguistic change since these migrations began is roughly the difference between Chipewyan and Navajo, between Biloxi and Santee Sioux, between Delaware and Cheyenne. What have been known since Powell's work as linguistic stocks were already well differentiated at the end of the Pleistocene. If the less evident relationships which have recently been pointed out by Kroeber and Sapir are actual, and some of them probably are, they go far back of this readjustment of peoples and may be due to separations 100,000 or more years ago.

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THE ASSOCIATION TEST AS A METHOD OF DEFINING RELIGIOUS CONCEPTS

BY LESLIE SPIER

HALF a dozen years ago I recorded a word-association list among the Havasupai of Arizona. Dr. Robert H. Lowie has briefly commented on this list in his *Primitive Religion* (p. 280). He points out that it shows the usual characteristics of such lists among ourselves; coördination, contrast, predication, etc. His interest in these associations lies in showing how the substitution of concepts and the building up of religious ideas may occur through association. My reason for obtaining the list was different: to attempt to define the vague religious concepts of the Havasupai.

Religious concepts are always necessarily vague, and this is especially true of the Havasupai. Here are a people poor in culture, with the barest of ceremonial life, shamanism of an unspecialized sort, few magical practices and tabus, and no localized spirits nor deities of any importance. In short, although they are neighbors of the religiously rich Hopi, they share the lack of cultural development of the Basin tribes.

They also show the same inability to formulate their culture, the same apathy and reticence in describing it, which Dr. Lowie is convinced is characteristic of all the typical Basin people. This is especially obvious when we contrast them with the Plains or Pueblo Indians. There is none of the sharp characterization of mythical beings, none of the stereotyped forms of vision experiences or of rituals, none of the purposefulness of Plains and Pueblo religious life. To be sure, a poor culture does not readily lend itself to precise formulation, but the Havasupai leave their religious concepts at exceptionally loose ends.

It is usual to record the religion of a people in terms of a formulated norm. But it is obvious that no two individuals among them hold precisely the same series of beliefs. How com-

monly shall we get the same answer on the meaning of the resurrection or the sin against the Holy Ghost among ourselves? It seems rather that there is a whole cluster of special forms of each of these beliefs. It is therefore legitimate only to describe the religion of a people as the sum of all the beliefs held by every one of them. It is equally true of the individual, that he has a fringe of ideas associated with the central notions. Their totality constitutes the concept for him.

I had thought to obtain the associations for a series of such ideas among the Havasupai and in this way to define the range and character of their beliefs more closely than their statements and my incidental observations would permit. If Kent and Rosanoff's experience with the reactions of normal subjects holds here, we might well expect the response words to be drawn from surprisingly small group of common reactions.¹ This inquiry was not carried out systematically, but the method may be of interest.

A list was drawn up in which the words referring to things religious were scattered among a larger number of indifferent words. I tried this only with my interpreter, Jess Checkapanyega, who had a fair command of English, had had some schooling, but who lived in the old style and had implicit faith in the native religion. He caught the idea of what was wanted readily enough. The list and his response words follow. The words for which I especially wanted associates are marked with an asterisk.

	<i>Cue</i> ²		<i>Response</i> ³
tacpě''	six	—	
gâðǝ'k	burden basket	—	
djîtai'igâ	father	âpa'a	man
natâk'e'pîgâ	night	nak'ûmk'rû'mkî	lot of darkness, very dark
âtcu'dîgâ	winter	mu'nîgâ	cold, freeze

¹ G. H. Kent and A. J. Rosanoff: A Study of Association in Insanity (American Journal of Insanity, 67, 1910).

² The phonetic system is that of the Phonetic Transcription of Indian Languages (Smithson. Misc. Coll., 66, 1916, no. 6) with the breve indicating the close vowels.

³ These responses are almost solely of the synonymous, defining, or qualifying type. There are only a half dozen possible cases of contrast and as many homonyms.

n _y ĩmsǎ'vǎ	white	ĩnya'gǎ	black
sǒl	finger	mí'ĩ	foot
dǔtvua'djǐgǎ	quipu	gwesi'vǐgǎ	the counting of something
tc'aukǎ	cedar tree	gwewa'djǎ	something growing
pahamǐ'ligǎ	brother-in-law	ǎpa' ^a	man
huga'θǎ	cup and pin game	gwehu' ^u	the head of something ⁴
xuwa'gǎ	two	—	
ǎkwa'gǎ	deer	ǎmu' ^u	mountain sheep
*gǎθiye'ǎ	shaman	gwegísǎpǒ''	they know how to do everything
kwaiyǎ'l	knife	kwaiñyǎdja	piece of black obsidian
su'ĩdjǐgǎ	older brother's son	teyu'ĩdjǎ	a relative
mási	girl	hama'n	child
*mǎta'vǐgǎ	north ⁵	n _y ǎhamǐ'dǐgǎ	hunting
djǐka'vǐgǎ	mother's brother's son (man speaking)	dǐtka'tǐgǎ	cut into two or more pieces
*k'e'djĩmpi'k	unconscious	n _y ihamǎ'djǐgǎ	little bit dead ⁶
no'hovǐgǎ	the hiding game	dǎsmǎlai'ivǐg	playing
*ĩnya' ^a	sun	ĩnya'djpa'gǎ	sun shining
mǎsma'	sinew	sávama' ^a	roots
*sǎma' ^a	spirit	gǐθiye'	shaman
kua'go	chicken	kwa'loyau'ǎ	(any) chicken
gǐnǐgǎ	younger sibling	howa'giǎ	partner
*teya'dj	corn	ma'gǎ	eat it
*iyuwaí'ǎ	heart, soul	kǒdǎu'dǐgǎ	spherical
kǎwe'vǐgǎ	south	midǎmi'dǐmǎ	pretty straight ⁷
gweǎo'nia	a trap	gweoi'ǎ	something to catch with
o'oga'djǐǎ	fire drill	o'ogwí'dǐǎ	slow match
hǒmtǎ'ǎ	squash	gwegǎo'lǎ	pumpkin or squash
kǎmwí'dǐmǎ	old woman	pǎk'í'	woman
*kwimǎ'djǐgǎ	rain ⁸	ǎhǎ	water
mǎdǐ'gǎ	beans	ma'gǎ	eat it
*ǎmí'yǎ	ghost	kwí'djǎdǐ'ǎ	ghost
mǎpǔ'k	knee	sukǔmwí'd	ankle bones which protrude
qǎqǔ't	fox	djipai'yǎ	all sorts of animals

⁴ The "cup" of this game is a rodent skull.⁵ The land of the dead is in the north.⁶ This is the literal meaning of k'e'djĩmpi'k.⁷ That is, in the middle of the heavens.⁸ Rain is prayed for.

ahua'djě	Apache	itcahua'	Yavapai, enemy
halěθu'ia	nine	vua'vīgā	ten
*Pagio'vā	God (?)	Pagio'gā	Dead Man Puller ⁹
mukwa'	dipper	gwepe'yā	something to dip with
tcīpa'vā	twine or coil	gwetovādju'dīvā	something to make
	basket stitch		a ring or spiral
*vāta'vīg	lightning	vāu'īg	thundering
midāmi'dīgā	straight	—	

I think this is a failure so far as my objective was concerned. Most of the responses seem purely verbal. I know too little of Havasupai to say how frequently these are common verbal couples (as Adam and Eve, etc.). Yet, if tried on a larger scale it might give results. It would be certain to indicate what the common associates of these significant words are. Obviously it should only be used with unsophisticated natives and there the linguistic difficulty presents a barrier.

I am well aware that associated words are not the same as associated ideas, but they do give some clue. The difficulty is in distinguishing the more significant responses from the verbal ones. This presupposes a greater familiarity with the culture than we usually have. But this is only a degree more difficult than in the use of such test among ourselves, where the observer must assume that he can distinguish the significant among his subject's varied responses.

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⁹ Literally.

TRADE RESTRICTIONS IN EARLY SOCIETY

BY WILLIAM CHRISTIE MAC LEOD

I

THERE is an event in the history of the Five Nations Iroquois which exhibits in interesting fashion the fact that greed, duplicity, and cunning in international affairs or diplomacy may appear full blown out of the conditions of life and the psychology of men of the Age of Stone. In the symbolism of this aboriginal American league of nations, the union of tribes was likened to one of the long houses of the natives, and called, The Long House. The Seneca, in the west, were, symbolically, Keepers of the Western Door. The Mohawk, in the east, were, likewise, Keepers of the Eastern Door. The Onandaga, safely ensconced geographically in the center of the confederated tribes, embraced the capital of the confederacy, and this, with its council fire, was the fireplace of the long house.

Toward the middle of the Seventeenth Century the French of Canada were trading with the Onandaga by shipping merchandise not along the direct route down the valley of the Mohawk, but around Lake Ontario straight into the Onandaga country. It seems clear from the eventual protest of the Mohawk that if the French had shipped through Mohawk territory they would have had to pay toll for passage through to the Onandaga. Moreover, it seems that there was nothing in the regulations of the native confederation requiring that goods entering confederacy territory must enter through one of the symbolical doors of the confederacy, the symbolism of which evidently reflected merely the facts of frontier military defense. Manifestly, for the French to pay toll in the Mohawk Valley for goods destined for the Onandaga would mean a higher price to the Onandaga. In their eventual protest the Mohawk appear to have been attempting an innovation in the policy of the confederacy by insisting that French goods from the St. Lawrence must enter by their "door" and pay toll as they passed through. Their insistence that the French follow this

procedure was accompanied by a thinly veiled threat that if it were not followed, war would be the consequence. Their delegate to the French was reported as saying:

Is not the door the proper entrance to the house; not the chimney or the roof of the cabin,—unless the visitor be a thief and wishes to surprise the people? We constitute but one house, we five Iroquois nations. We build but one fire. And we have through all time dwelt under the same roof. Well then,—will you not enter the cabin by the door, which is on the ground floor of the house? You should begin with us, the Mohawks. If you begin with the Onandagas, you would be entering through the roof and the chimney. Have you no fear that the smoke may blind you!—our fire not being extinguished! Do you not fear to fall from the top to the bottom!—having nothing solid whereon to plant your feet!

It would have been interesting to have had note of the reaction of the Onandaga to these claims, and of subsequent developments in the matter. The Mohawk already had the office, residing in one of their sachemships, of Collector of Tribute from subjugated peoples, an office continually increasing in importance. Located on a frontier of strategic importance, it is apparent that, if the confederacy had continued its natural development unchecked by European intrusion, some interesting struggles for power within the confederacy would have appeared. As it was, the organization of confederacy was anything but democratic in any full sense of the word.

The Mohawk protest was recorded in 1652. This was quite too early for the Mohawk concept to be considered as reflecting anything but aboriginal notions. The development of this concept of toll-taking from traders, however, is evidenced as aboriginal by its general distribution throughout both agricultural and non-agricultural North America. In our consideration of non-agricultural groups we shall show that it is a right generally conceived of as pertaining to land ownership, and merely an aspect of the native land tenure.¹

¹ The Mohawk protest is from The Jesuit Relations, cited in the Appendix to Lloyd's edition, 1904, of Morgan's *League of the Iroquois*. About this time the Iroquois were taking toll from western Indians who desired passage across Iroquois territory to trade at Albany. See Wraxall's *Abridgment*, 1759 (of the lost Albany records), and p. xliii of McIlwain's introduction to the Harvard reprint of Wraxall, 1910. Cf. Lawson, *Carolina*, 1715, p. 101; and Lederer, *Discoveries*, 1791, pp. 21–22, on trade restrictions southward of the Iroquois.

It seems that in aboriginal America, another type of restriction on trade obtained; a type definitely evidenced, however, only for the natives of the Huron Iroquois confederacy of the St. Lawrence Valley. The trader abroad, who discovered a new line of trade, or a new field for trade, had a monopoly right to this line or field. In the middle of the Seventeenth Century it was noted by a Jesuit among the Hurons² that:

Several families have their own private trades, and he who was the first to discover it is considered master of that line of trade. The children share the rights of their parents in this respect, as do those who bear the same name [mother-sib?]; no one goes into it without permission; which permission is given only in consideration of presents [i.e., payment]; he associates with him as many or as few as he wishes.

The note of another Jesuit may refer to this type of monopoly,³ or perhaps merely to the type conferred by geographical position in territory owned. He writes:

The Arendaranons are one of the four nations which compose those whom we call the Hurons. It is the most eastern nation of all and is the one which first encountered the French and to whom in consequence the trade belonged according to the laws of the country. They should enjoy this alone; nevertheless, they find it good to share it with the other nations.

II

The bureaucratic national and federal organization (usually with the clan or sib as the unit of representation), typical of the peoples of agricultural North America, along with the associated national (tribal) and federal overrights in the matter of land tenure, and the national and federal control of boundaries, is most probably the consequence of the diffusion of political concepts which moved northward from the Central American areas of advanced civilization along with the agricultural complex. In non-agricultural North America, and in those parts of agricultural North America latest brought under the influence of the agri-

² *The Jesuit Relations*, v. 10, pp. 224-226.

³ *The Jesuit Relations*, v. 20, p. 19; also v. 21, p. 177. The Huron country was destitute of the raw materials used in making wampum and the finer arrowhead materials, and of copper. Copper and agate arrowheads were obtained in Michigan, and traded with the maritime Algonkian for wampum and such. See D. B. Reed, *The Hurons, Transactions of the Canadian Institute*, 1889-90.

cultural complex, the family persisted as the unit of political representation. Where the sib obtained unmodified by the agricultural complex, the family, of course, was unilateral rather than bilateral. Wherever aggregation and political unity of many families obtained, it existed in the form not of the bureaucracy typical of the region of the agricultural complex, but in the form of a feudalistic type of pyramiding of family heads, and sept heads, topped by the tribal chief who was always the particular representative of both a family and a sept. One may exemplify this by comparing, say, the political organization of the Haida with that of the Omaha. The family was, typically, the owner of its own territory, limited not at all, or but slightly, by overrights pertaining to the larger political unit; and where such overrights obtained they assumed a feudal rather than a bureaucratic national form.⁴

Anyone wishing to travel, for any purpose, across the territory of a family or band had to pay the family owner or the feudal (or quasi-feudal) lord or chief for the privilege, the payment in a sense being equivalent of a fine for trespass.⁵

In the great Northwest, the Hudson Bay Company early found that the Stone Age aborigines had very definite boundary and trade regulations. The Company's attempts at times to set themselves above native law occasioned much strife and some bloodshed.⁶ The natives of this region seemed to be universally eager, not so much to take toll on goods in transit over their territory, as to forbid the transit of traders altogether, with a view to carry the goods themselves as middlemen between adjacent groups.

⁴I have elaborated on this in a paper in the *Proceedings of the International Congress of Americanists*, 1924 (in press). The fact that the Tsimshian, as evidenced by Boas and Barbeau, were independently tending toward the evolution of a bureaucratic state where the phratry played a prominent part as a representation unit is sufficient to indicate that the diffusion of concepts of political organization with the agricultural complex does not explain *all* the development of political organization in agricultural North America. One can leave much room for independent development and still feel that the above generalization is warranted by the facts.

⁵See for example, F. G. Speck, *Northern and Eastern Algonkian Social Organization*, 1917 Proceedings of the American Sociological Society; *Social Life of the Northern Algonkian*, Memoir 70, Canadian Geological Survey, 1915, pp. 4, 17. Galbreath, in Dawson: *Tribes of the Yukon*, Canadian Geological Survey, 1887, p. 2,

If a group were too weak to prevent passage of traders from a neighboring group, as was frequently the case, one group might then be in a position to act as middleman over an unusually wide territory, cheating its weaker neighbors out of their rights to serve as middlemen between it and the groups beyond. The interior Tagish Tlingit, for example, had been "from time immemorial" situated in a position geographically to intercept the trade between the coast at Lynn Channel held by the Chilkat Tlingit, and the Athabascans of the interior, but they "have not been strong enough to levy a toll" or to insist on the right to forbid passage and act themselves as middlemen. They were, instead, "dominated" by the Chilkat, and "*kept poor in goods and spirit.*"⁷ Their condition recalls that of the Tsetsaut (Wetalth) of Portland Inlet, who were "harassed" by the Cape Fox Tlingit to the north of them and exploited in trade by the Nassqa to the south; for the Nassqa claimed the trade of the Wetalth, meeting them at stated seasons and taking their furs in trade at their own evaluation, and giving them what they pleased of other products in return. In this way the Wetalth were *kept very poor, and little better than slaves.*

When the Europeans came into the region, the Nassqa forbade the whites to trade with the Wetalth except through the Nassqa as middlemen.⁸

The diversification and segregation of types of desirable natural products on the northwest coast was very marked, and the

and Emmons, *The Tahltan Indians*, Un. of Pa. Pubs. in Anthropology, 1911, p. 7, afford notes on this practice for the Northwest. Emmons tells of a Tahltan chief who wished, in the early days of the Company, to descend to the coast through territory of the Stikine to see a steam-ship anchored off the mouth of the river; permission to descend the river, with a safe-conduct, however, was given by the Stikine Indians only upon the payment of five hundred skins! Galbreath notes that the Nassqa once employed in the Canadian gold mines near Dease Lake on land owned by the Tahltan, might kill beaver for food, but had to give the skins to the owners of the land. Similar consumption of meat but surrendering of skins upon mutual agreement for reciprocity is noted as provided for in the boundary agreements between the Indians and Eskimo of Alaska by Dall (*Alaska and its Resources*, 1877, p. 144.)

⁶ See for example, Simpson, *Journey*, 1841-42, pp. 125, 127.

⁷ Dawson, p. 14; Dall, pp. 32-33.

⁸ Emmons, pp. 21-22. Cf. Galbreath, p. 2: "The right to trade with the Tahltan was restricted by hereditary right or custom to two or three families of the Stikine coast Indians."

various native tribal economies had developed on the basis of active intergroup trade in local specialties to the point that the maintenance of the standard of living of each tribe was to a considerable extent dependent upon this trade. Some tribes were so dependent upon it that they could scarcely exist, or not at all, in the territory occupied by them, if they were cut off from inter-tribal trade, while excessive exploitation by the profit-taking of powerful neighbors who insisted unjustly on acting as middlemen would impoverish them so far as all the comforts of life went. There were, for example, the Kitselas (Gyispaqlaots) Tsimshian of the upper Skeena River, located just below the Kitiksan Tsimshian (Gyitksan) of the edge of the plateau, but above the Tsimshian tribes of the river below. The Kitselas:

were not permitted to descend the river for trading purposes below the first fishing village of the group below them, and in like manner they themselves restricted the Kitiksan to their own country above the canon. This position of middlemen was their life, *for although their food supply of salmon was sufficient, their narrow strip of river country was poor in every other product.*

The Hudson's Bay Company in time founded a trading post on the plateau, at Hazelton, which furnished the Kitiksan with all they needed, and the Kitselas trade was ruined, with the result that they found life insupportable in their old home and migrated. They forced the Hudson's Bay Company, in 1886, however, to pay them for their ancient exclusive right to trade with the Kitiksan.⁹

On the northwest coast, property rights in beach fronts included property right over the seas stretching beyond, including outlying rocks and fisheries.¹⁰ The owning group had the right

⁹ Boas, *The Tinnch of Portland Inlet*, British Association for the Advancement of Science, 1895; C. T. Emmons, *The Kitselas of British Columbia*, AMERICAN ANTHROPOLOGIST, 1912, p. 471.

The Hudson Bay Company attempted to establish a similar inland post in the Tahlitan country which would trade with the Athabaskan of that region without the use of the coast tribes as middlemen; the coast tribes sent parties inland which destroyed the fort (Simpson, p. 125).

¹⁰ Dawson, *The Queen Charlotte Islands*, Canadian Geological Survey, 1879, pp. 113-117. Niblack, *Indians of Southern Alaska*, U. S. National Museum Report, 1888, p. 334.

to prohibit the passage of the canoes of traders through the waters of its coast, a right, however, which could be enforced only by the more powerful tribes. Sproat writes of the Nootka tribes¹¹ of western Vancouver Island:

The coasting intertribal trade is not free, but is arbitrarily controlled by the stronger tribes, who will not allow weaker tribes to go past them in search of customers; just as if the people of Hull should intercept all the vessels laden with cargo from the north of England for London, and make the people of London pay for them an increased price, fixed by the interceptors.

When the Clayoquat failed in an attack on the Kyyoquat, an equally powerful Nootka tribe further up this coast, the Clayoquat decided that it was "necessary to stop all trade to the north in the direction of the Kyyoquats."¹² Of these practices in their effect on the intertribal slave trade Sproat¹³ noted that:

As it is the practice of powerful tribes to prevent the canoes of smaller tribes from passing their villages in search of customers, the price of a slave increases at each stage as he is conveyed along the coast to the best market.

When Captain Cook reached Nootka Sound native canoes poured in from tribes all along the coast. There were enough stranger Indians at the sound to insist on free trade for themselves with the strange vessel. But the village chief who owned the waters of the sound, ordered the strangers to stand off and all purchases of iron and other goods made from Cook had to be made through the natives owning the Sound as middlemen. On the visits of other ships later, Indians from as far away as Puget Sound sometimes came up to Nootka Sound to trade, and their obligation to use the natives of Nootka Sound as middlemen continued to be recognized by the strangers.¹⁴

In conclusion, we shall merely observe that these facts indicate that *the intergroup struggles of the hunters and agriculturalists of the Stone Age North America were, to some extent, more or less pacific struggles for markets*. Not only the greed for sources of raw materials, but the eagerness for new markets, tended to bring

¹¹ Sproat, *Scenes and Studies of Savage Life*, 1867, p. 78.

¹² Sproat, p. 195.

¹³ Sproat, p. 92.

¹⁴ Jewett, *Narrative*, 1815, p. 36; Curtis, *The North American Indian*, v. 11, p. 63.

about war, *with a resulting commercial exploitation of the weak by the strong*. Much else might be said concerning economic evolution on the basis of the facts presented and summarized, but the above stands out as, in present day discussions, as of particular significance.¹⁵

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¹⁵ Consider the facts in relation to those discussed in my volume *The Origins of the State Reconsidered in the Light of the Data of Aboriginal America*, Phila., 1924, for instance; all of these data certainly tend to do away with much of the distinction between "civilized" and "primitive."

Italics in the above quotations are not in the originals.

STARS AND CONSTELLATIONS OF A PAWNEE SKY MAP

BY RALPH N. BUCKSTAFF

THIS Sky Map is in the collection of Pawnee material at the Field Museum of Natural History at Chicago, and I am indebted to that institution for the photographs used in this paper. The map was found in a sacred bundle among other things common in these collections. This chart is oval in shape, made from a piece of tanned elk skin about 15 by 22 inches in size. One end is colored with red and the other brownish yellow. According to Dr. Ralph Linton, of the above-named Museum, this map is at least three hundred years old.

The stars are represented by a four-pointed figure and drawn in five different sizes which are indicated by the letters *a*, *b*, *c*, *d*, and *e*. This would mean as many different magnitudes. Taking the magnitudes of the stars in the eleven constellations, they are divided as follows: Of the first, we find eleven, the second are nine in number, while forty-four are shown as third. The other two classes were not counted because they are placed at random. The figures represented by some of the groups are crude owing to the fact that the Indians did not have any accurate knowledge of drawing.

Down through the center of the map may be seen a stream of stars of the fainter magnitudes, which is true of most of the suns of the Milky Way as we see them with the unaided eye.

The star groups on the right side of the division are similar to those seen in the summer skies. This half of the map is marked at the extreme end with a band of brownish-yellow color.

The constellations on the left side of the Milky Way are typical of the winter heavens. This end of the oval is marked with a reddish-brown band.

The eleven groups that appear on the map have been traced with an unbroken line. For comparison, the constellations as we know them are outlined with dashes and the stars shown by circles.

The V shape of Taurus is shown in Figure 1 by the stars marked *a*, *b*, *c*, *d*, *e*, *f*, and *g*. Zeta Tauri, Alpha Tauri, Theta Tauri, Gamma Tauri, Sigma Tauri, Epsilon Tauri and Tau Tauri. (*a*) is the third magnitude star Zeta, (*b*) Aldebaran first magnitude, (*c-d*) probably the double star Theta, (*h*) then would be Gamma. The stars forming the other side of the V would be (*e*) Delta, (*f*) Epsilon, and (*g*) Tau.

Near the position shown by *h* is the variable Lambda Tauri which ranges from 3.3 to 4.2 magnitude. This star might have been much brighter at one time.¹

To the right, Figure 3, is a group of seven stars *a*, *b*, and *c* that resemble the Pleiades and about in the same position in respect to Taurus. If we look at the Pleiades in the evening of late March, they will be found as indicated by the drawing, the four stars forming the square pointing down to the horizon.

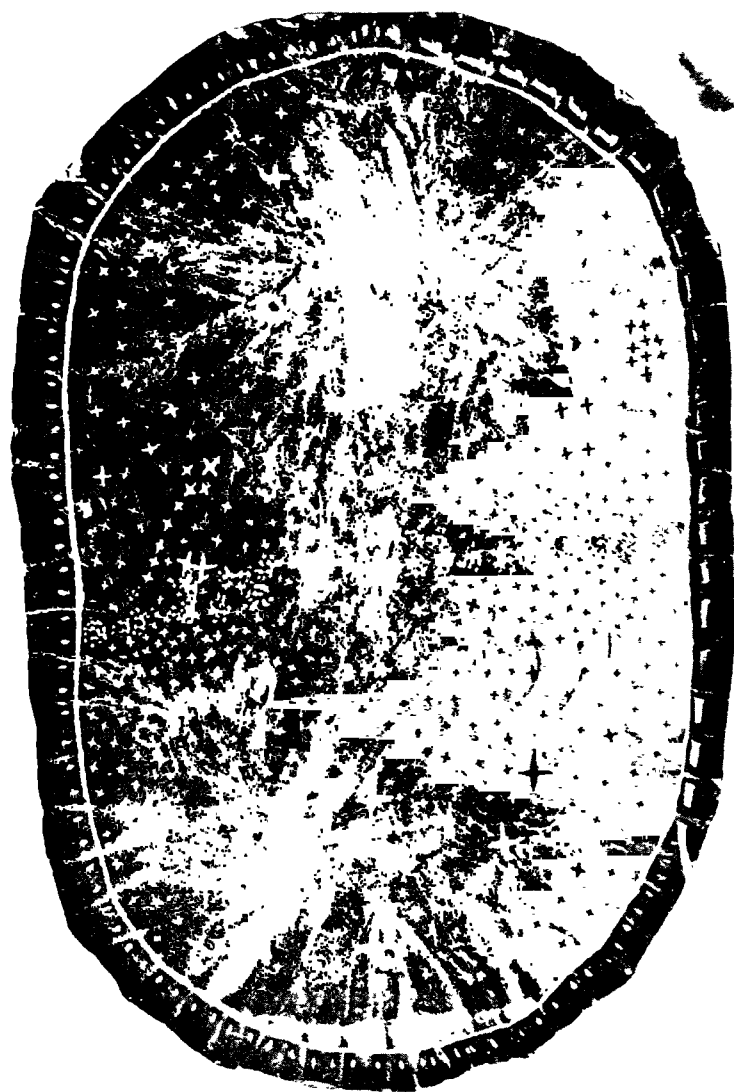
The stars shown in Figure 2 resemble closely the bright stars in the Orion group, (*a*) the first magnitude star Alpha Orionis, (*b*) Beta Orionis, (*d*) Rigel, (*c*) one of the stars in the belt and (*e*) Kappa Orionis; there are, however, within this area several groups of three stars in a row, either one of which might represent the belt of Orion. The relation of these three constellations, Taurus, Pleiades and Orion, to each other is quite accurate.

These stars are reversed in regard to their position to the Milky Way.

Drawing lines around the stars shown in Figure 4, we have a geometric pattern similar to Auriga and including the stars Alpha Aurigae, Beta Aurigae, Theta Aurigae, Nath and Iota Aurigae of that constellation, (*a*) being Capella, (*b*) Beta, (*c*) Theta, (*d*) Nath and (*i*) Iota. The position of this group of stars in relation to Orion and Taurus is not correct, being above them in the sky. It is, however, correctly drawn in relation to the Milky Way.

The stars in Figure 5, *a*, *b*, *c*, *d*, *e*, and *f* in the right hand portion of the map are a good representation of the geometric pattern of Lyra formed by Vega, Zeta, Beta, Gamma and Delta of that

¹ In March of 1924 the bright planet Venus passed between the constellations Taurus and the Pleiades, in about the same position as indicated by H. Venus has taken this path many times in the past.



Field Museum of Natural History, Chicago
PLATE IV.—Pawnee Sky Map.

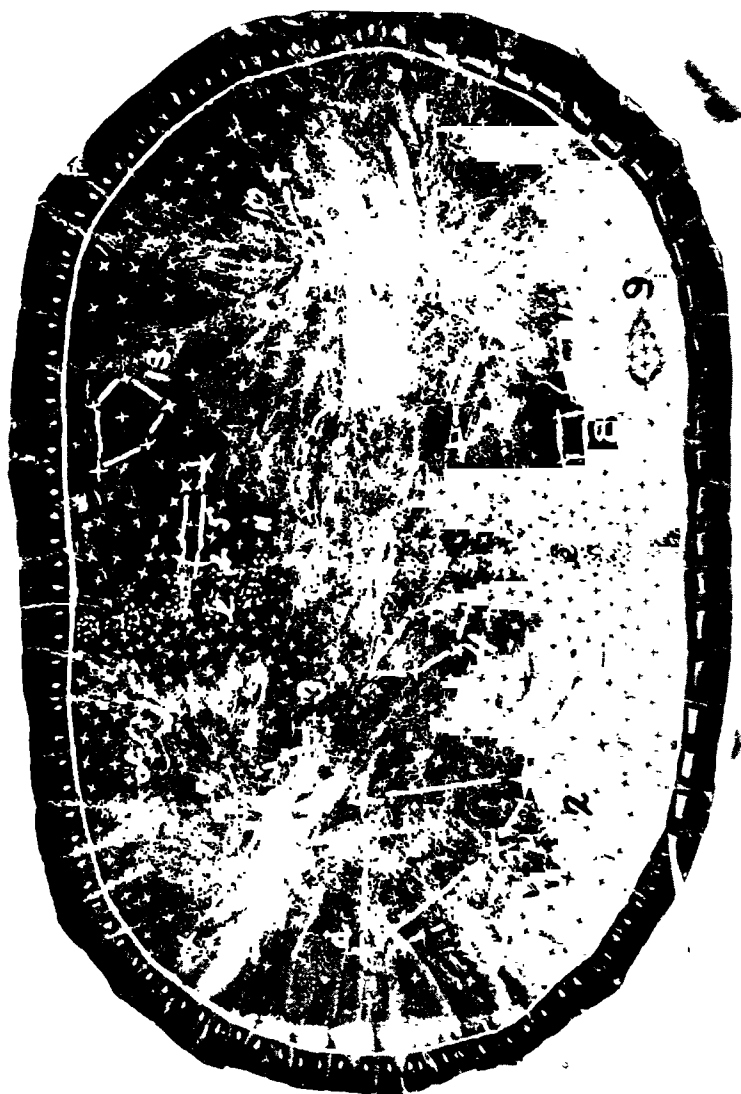
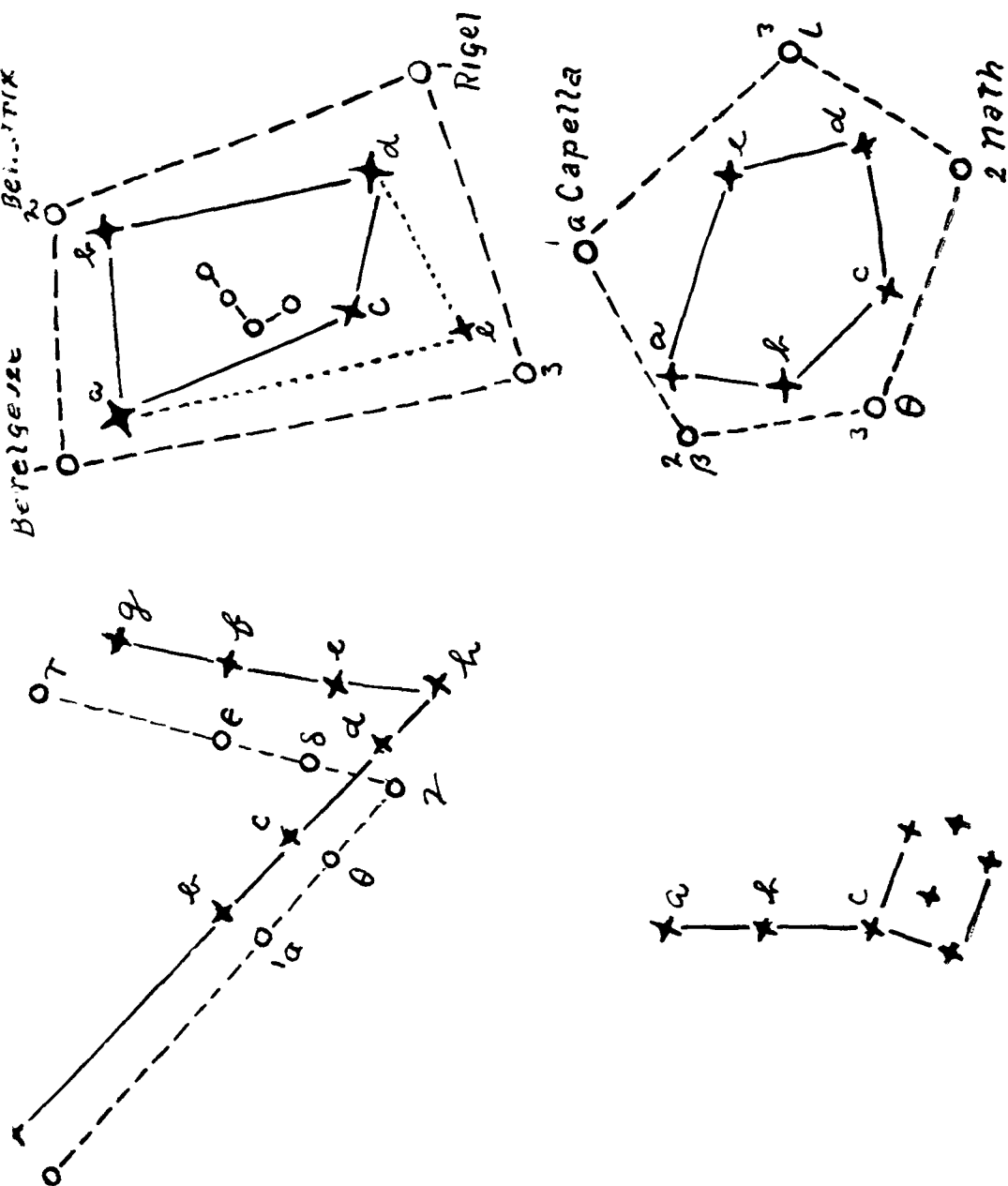


PLATE V.—Pawnee Sky Map.

Field Museum of Natural History, Chicago



FIGS 1-4.—Constellations on Pawnee sky-map.

constellation. (*a*) and (*b*) in the figure represent Gamma and Beta, (*c*) and (*d*) Delta and Zeta, (*e*) Epsilon. (*f*) is shown to be brighter than the other stars in that group which is true of Alpha Lyrae. The Indians placed Lyra close to the Milky Way which is its true position.

The likeness of Corona Borealis is shown in Figure 6. The Indians used eleven stars, whereas our maps have seven in the circle formation. The position is not correct. It should be more to the East.

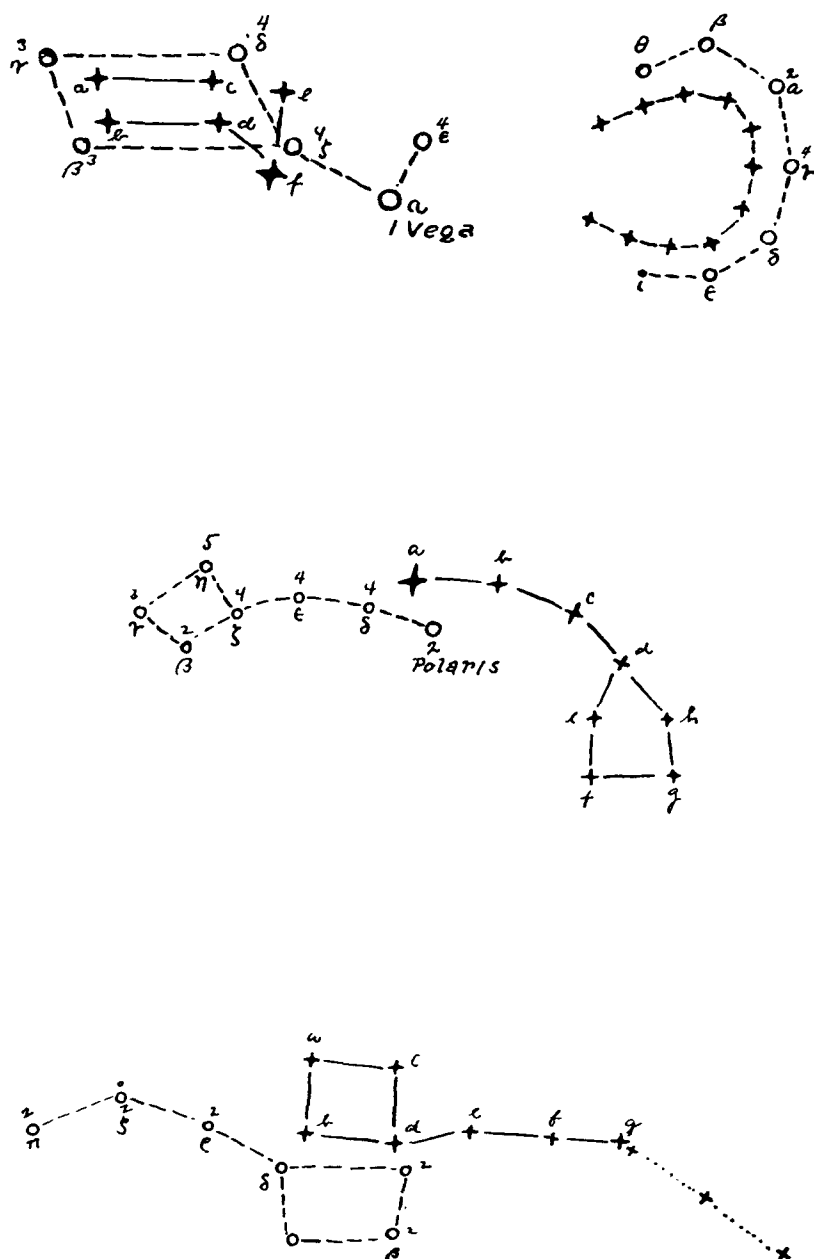
The stars in Figure 7, *a, b, c, d, e, f*, and *g* look very much like the group forming Ursa Minor, (*a*) being Polaris; Delta, Epsilon, Zeta, Eta, Gamma, and Beta forming the tail and body of the Bear. As they have more stars in this constellation than we see, their identification is not certain, however, they might be as follows: (*f*) and (*g*) Gamma and Beta; (*b*) Delta; (*c*) Epsilon; (*e*) and (*h*) Eta and Zeta. The stars forming the tail show a curved line the same as we see it. The Indians used eight stars in the group and showed them to be about the same brightness.

Alpha, Beta, Gamma, Delta, Epsilon, Zeta, and Eta of Ursa Major are shown in the stars marked *a, b, c, d, e, f*, and *g* in Figure 8. Alpha and Beta, (*a*) and (*b*), point to Polaris which is the same as we see them. The tails of the bears, however, are reversed when seen in the position as indicated on the map.

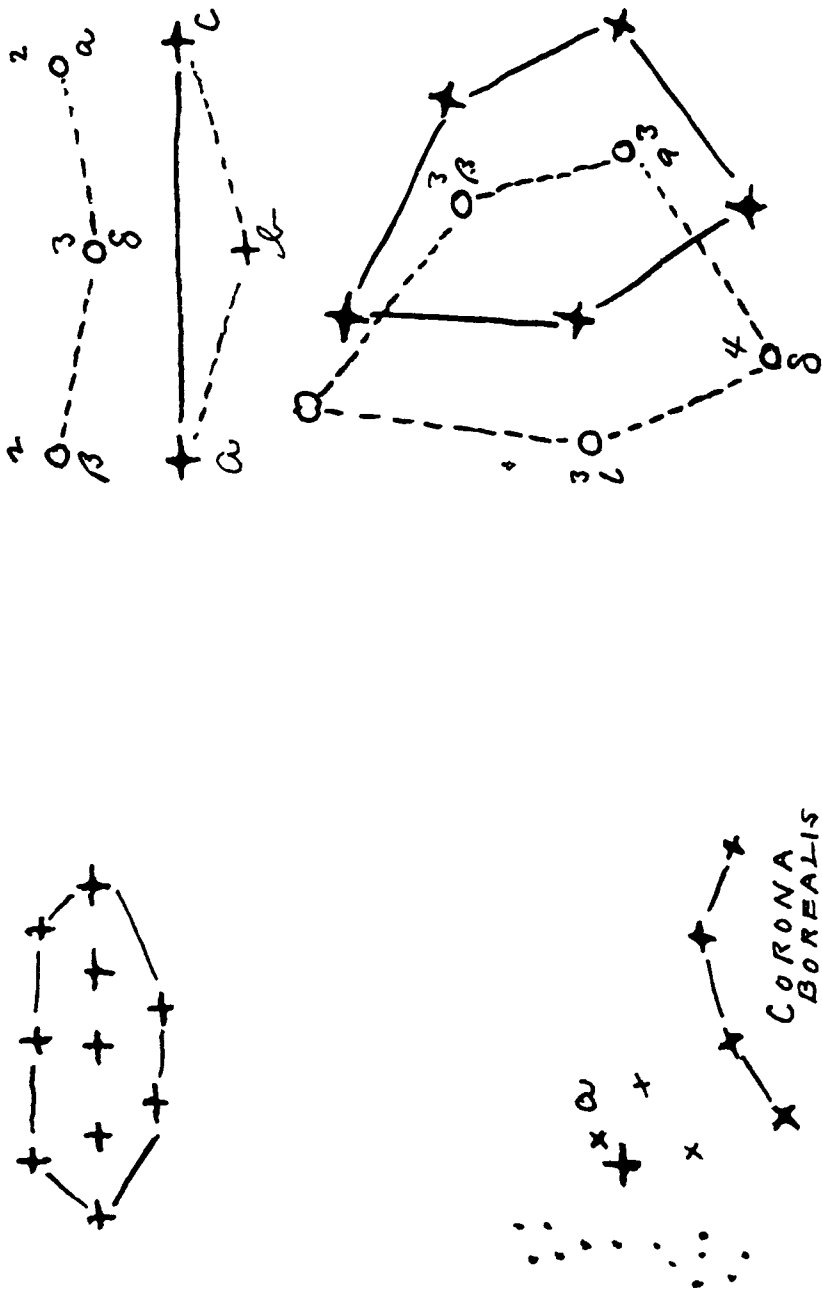
Below Ursa Major is a small group of stars, Figure 9, which might be the constellation Coma Berenices indicated by ten faint stars. This scattered cluster is in about the same relative position in the sky to Ursa Major as the chart shows it. The three groups, Ursa Major, Ursa Minor, and Coma Berenices are quite accurately placed in relation to each other. These stars as we have catalogued them range from fourth to sixth magnitude in brightness.

Andromeda is represented by three stars, see Figure 10, Gamma, Beta, and Alpha. This group of stars might also be the three stars in Cygnus, Epsilon, Gamma, and Delta. The constellation, however, is above Lyra in the heavens. Beta, Alpha (Altair) and Gamma, of Aquila, form a like configuration. The "Eagle" is to the south of Lyra as pictured by the Indians.

At the top of the map, see Figure 13, and in about the same position in the sky in respect to Lyra, is a group of four stars



FIGS. 5-8, 12.—Constellations and double star on Pawnee sky-map.



FIGS. 9-11, 13.—Constellations and double star on Pawnee sky-map.

which resemble Gamma, Beta, Upsilon, and Xi in the head of the Dragon. Taking the five brightest stars in this region, we should find a constellation similar to Cepheus.

The Pawnee Indians have recorded no less than two double stars, the larger and brighter of the pair being drawn prominently and its companion close to it and proportionally smaller. These stars do not resemble the others, so they could not have been placed there to fill in or at random but indicate keen observation. One of these double stars is between Lyra and Corona Borealis near the Milky Way, see Figure 11 on the map. The second, Figure 12, is the tail of Ursa Major, (this constellation² is sometimes called the "Big Dipper"), which we know as *Miser* and *Alcor*. The position of these twin stars positively identifies this constellation. If we continue the line of the tail downward to include the next bright stars, this would place the double star in the bend of the tail of the bear just as it is in the heavens.

These Indians recognized the constellations as we do, also, the important stars, drawing them according to their magnitude.

The groups were placed with a great deal of thought and care and show long study. They were drawn on the map first, and the stars in the background were put in later as the smaller ones do not show any interference with the constellations. The large groups were foremost in their minds, their relative positions one to the other being quite accurate. The fainter points of light were put in merely to fill the vacant spaces and represent stars of the lesser magnitude.

They recognized the seasonal shift of the stars. This is portrayed by the division of the map.

That they were keen observers, is also shown by the fact that they recorded some double stars. The map being three hundred years old would bar any white influence.

From the facts as we see them regarding the chart, the Pawnee Indians must have had a knowledge of astronomy comparable to that of the early white men.

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OSHKOSH, WISCONSIN.

² The late Miss Alice C. Fletcher in her paper "Star Cult among the Pawnee a Preliminary Report" (*Am. Anthropologist*, 730-736, 1902), mentions Ursa Major as being possibly one of the groups used by the Indians.

SOME NOTES ON DRY ROCK SHELTERS IN WESTERN TEXAS

By VICTOR J. SMITH

SINCE there are no available published data bearing upon dry rock shelter finds in western Texas, these brief preliminary notes are offered for purposes of comparison with similar finds elsewhere and in order to supply those who may be interested with some information concerning the nature of the sites now being investigated in the Big Bend district of Texas.

Climatic conditions in this territory are rather favorable for the preservation of specimens which in many localities would have long ago perished. The district is semi-arid and the rugged topography offers numerous shelters where fragile material has been kept covered and preserved in a bone dry state for many years.

The district directly referred to in this report is a comparatively small one, since all of the shelters which have been investigated to any extent are in the northern part of Brewster County, though reports from ranchmen and other sources indicate that similar material has been found over a considerably wider area, especially to the south.

The mountains in the vicinity investigated range from 4,800 to 6,750 feet above sea level with a rise of from 300 to 2,250 feet above the valleys or surrounding planes. At the foot of many canyon bluffs or at the top of the talus are to be found a number of rock shelters, the most important of which may be roughly classified as follows:

A. Long open shelters, sometimes partly filled with slabs, boulders, and smaller fallen rock;

B. Cave shelters extending back into the cliff. Sometimes these are cluttered with loose rock but are usually floored with fine dry dust, animal refuse, etc., from six inches to six feet deep. The mouth of these caves vary from ten to thirty feet in width and the shelters themselves are from ten to fifty feet in depth.

The shelters which indicate the most use as primitive habitations are, of course, those which afford the best protection from the elements and, in addition, are near mountain streams or water holes which, in spite of the dry nature of the country, are rather permanent at many places. The specimens herein reported were found from surface level to a depth of six feet. In a number of cases crude drawings have been observed on the shelter walls and, in several instances, rock surfaces are grooved and lined in a crisscross fashion with marks varying in size from that of a horse hair to V grooves three-fourths of an inch deep. In other places parts of the rock floor or wall are dead smooth and polished to a high gloss—evidently the result of constant contact with the human body. One such case indicates the position taken by the squaw at the mortar or “pot-hole” as she ground food with the pestle. All of the shelters yield specimens of food grinding implements, most commonly the muller stone and metate and less often the pestle, though many mortars are evident.

The general character of the camp refuse yielded is practically the same throughout the district. Most bulky is the mass of accumulated desert plant material which was used in the preparation of food and drink as well as in the manufacture of basketry, sandals, string, rope, etc. Some of this material is tied loosely in bundles or coils (see Pl. VI, a)—evidently not pottery rests though of similar design. In the practical absence of pottery these bundles were probably methods of storing or bringing in such material or may have been used as basket rests. Other camp materials found are: firewood; ashes; charcoal; cactus hulls; acorn and walnut (Spanish) shells; chewed desert fiber, some of which still shows the imprint of human teeth; human bones; bones of animals, often split for the marrow; rocks used about the camp fire; flint chippings; gourd shells; mesquite beans; acorn cups and shells from the live oaks; bits of twisted or plaited string from one-sixteenth to one-fourth of an inch in diameter (see Plate VII, a); and small corn cobs (see Pl. VII, b). Regardless of depth, the finds run rather uniform, except in the case of one deep excavation here the twisted string found seemed to indicate less skill in its manufacture. Little or none of the true characteristic dry rock



FIG. 1. Typical rock shelter.



FIG. 2. Wooden knife, shuttle or toggle.
(Photograph taken by courtesy of Mr. Charles Arthur, of Alpine, Texas.)

shelter specimens may be said to be surface specimens. In fact, the first few inches rarely yield anything other than the metate and mano stone, mortar and pestle, or flints. Until this time I have assumed that these surface specimens, since they correspond exactly with many open camp sites, are largely the remains from the Comanche habitation, a relatively short one as compared with the Mescalero Apache, who were driven out as the Comanche were forced westward by the whites.

Without further attempt at interpretation, other than to say that the artifacts found resemble in many respects those of Mesa Verde and Johnson Canyon,¹ the following notes are given concerning the most important of the specimens found:

1. Wooden articles Pl. VII, b.

a) Fire sticks (see Pl. VII, b), one of which fits snugly into a hole. About $\frac{3}{8}$ in. in diameter. Soft punky wood. Hole worn near edge to allow air. Much fine bark and vegetable fiber found which might have been used in the ignition of fires.

b) Wooden knife (see Fig 2). One only found. Material is exceedingly hard post oak, well seasoned. The whole knife is polished but the hole (one inch at largest point) is very highly polished and runs diagonally as if worn so under constant friction. Possibly this was used as a shuttle. This is ornamented with finely carved parallel lines. The "knife" is one and three-fourths by eleven and one-half inches.

c) Sharpened sticks (see Pl. VII, b). These average about one-fourth to three-eighths inch in diameter and unbroken specimens are a foot or more long.

d) Sticks wrapped about with fiber string. One of these wrapped with bristles of fiber projecting (see Pl. VII, b). This specimen appears to be a small round brush which has been worn down to a stub.

e) Large sticks bent and tied at the top to form a cache for the baskets described below.

2. Sandals (see Pl. VI, b). A number of sandals of tough desert fiber have been found, all more or less damaged. These range in size from an article suitable for a small child to a full-sized man. The figure indicates thongs and loops used to tie these on. The only use of leather observed was in the repair of baskets.

3. Baskets Only two good specimens have been located (see Figs 6 and 7) though many imperfect parts of similar weave have been found. These better specimens are of the coiled bowl-shaped type and are without decoration. They measure twenty one inches across the top and stand nine inches high. The several imperfect basket parts suggest articles for carrying

¹ Thirty-third Annual Report of the Bureau of American Ethnology, Smithsonian Institution.

and storing food as well as the possibility of a treated inner surface in order to carry water. Pl. VI, d indicates other types of weaves and edging.

4. String and rope work. Hundreds of short pieces of string have been found. Most of these are three strand spiral twist and measure about one-sixteenth inch or slightly larger in diameter. A number of specimens show the four strand plat or braided strand. Similar pieces, but few in number, run up to as high as one-fourth inch in diameter. Many of these short pieces are knotted, sometimes several pieces being knotted together in such a fashion as to suggest anet of a bout one inch mesh (see Pl. VII, d). Inasmuch as there is no fishing in this district, it is assumed that these may have formed a part of nets used in catching rabbits. Among the bulk of rough plant material is found less carefully made strings loosely knotted, probably used in tying plant material together as it was gathered (see Pl. VI, a).

5. Pottery. Only two distinct pieces of pottery have been located. The better of these, in two pieces, forms a triangular scrap of vessel. The color is light brown with a darker color in the lined design. The thickness averages one-fourth inch. Much more clumsily made is the second piece, a thick walled white cup about three inches in diameter which was found in a cache with the baskets referred to above.

6. Miscellaneous specimens are bits of shell, beads (about three types) salt (crude, unclean lumps), soft red crayon, flint arrowheads, and scrapers.

Within the limits of these notes no attempt has been made to draw comparisons or to indicate negative finds. It is hoped, however, that the above will prove of some comparative value and that a more detailed report on the field work² in this section may follow in a bulletin from the College.

THE SUL ROSS STATE TEACHERS COLLEGE
ALPINE, TEXAS.

² Over 100 sites of various natures have been investigated.



PLATE VI

a, Desert plant materials tied loosely together with yucca string; b, Fiber sandals; c, Basket ears, d, Types of basket and mat weaves and edging.

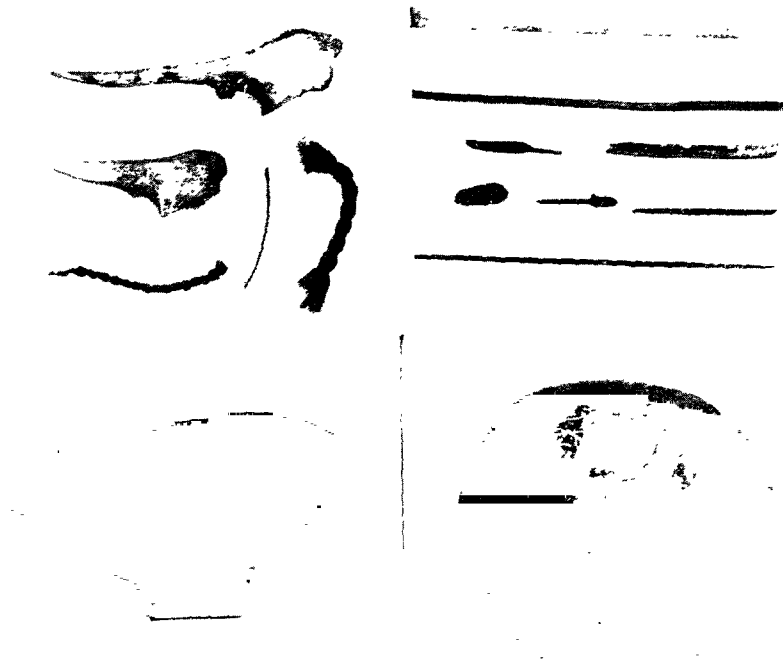


PLATE VII

a. Fiber string and rope, bone piercing instruments, b. Specimens of wooden objects: fire sticks, corn cob, fiber brush, stick with wrapped string, pointed stick, c. Basket from cache containing beads, arrow heads, etc., nine inches high, twenty-one inches wide.; d. Basket showing repairs with leather.

CONTACTS BETWEEN ARCHAEOLOGICAL AND DENTAL RESEARCH

By HENRY W. GILLET, D.M.D., F.A.C.D.

IT WAS my good fortune, in the summer of 1925, to spend a few days with Dr. A. V. Kidder at Pecos, New Mexico and later to stay for several weeks at Swart's Ranch, in the Mimbres District, with Mr. and Mrs. C. B. Cosgrove, and to make intimate acquaintance with the very interesting research excavations being conducted at these locations, for Phillips Academy and the Peabody Museum respectively.

Aside from general interest in the fascinating subject of early American archaeology, I found myself developing a deep special interest in a field which seems to have had little or no consideration from those engaged in such excavations. This omission is not at all surprising because archaeologists have not been informed of the tremendous importance of the skeletal tooth and jaw specimens they have recovered, while the dental profession, for which such material opens an avenue of research concerning a vital present day problem, have been entirely unaware of the existence of such material.

I am told that many specimens of teeth and jaws not sufficiently perfect to be of obvious value for the laboratory of Physical Anthropology have been returned to the trenches because of this lack of contact between two equally earnest professions,—the one eagerly searching the meagre records of the past, as left by early races in their homes, their ceremonial rooms and their graves; the other eagerly searching for ways to deliver coming races from the scourge of disease.

At Dr. Kidder's request, I am writing this to inform archaeologists of the reason why such specimens are of value in dental research, and how they may proceed in order to make them available.

The dental profession is making great efforts to elucidate more fully the etiologic causes for dental caries, for the disease

commonly known as pyorrhea, for the irregular position in which childrens' teeth often develop, known technically as malocclusion, and for various other ailments and abnormalities of teeth and jaw.

It is self-evident that food supply and food habits must be important factors in tooth development, and that the absence from the food of the elements necessary for the development of good teeth, must have deleterious results. Dentists also feel that vigorous use of the teeth and jaws in masticating food, has a profound effect in influencing the development of strong disease—resisting masticating organs, and that this is especially true concerning the membranes, ligaments and vascular tissues surrounding and supporting the teeth, which are the seat of pyorrhea and allied diseases.

To demonstrate the values of different foods so as to permit authoritative conclusions, we must fall back upon research with such animals as rats because of the impossibility of controlling the food of human beings with sufficient accuracy, and even if this were possible, generations would be required to reach conclusions. In this research, biologists are making considerable progress, but in the specimens and data that can be collected in the Southwest and in Mexico, we have a record of what has happened in the way of tooth development and disease progress in human beings in past centuries, and it seems likely that diet can be well correlated to the specimens.

Therefore, it follows that a comprehensive collection of jaws and teeth from different sections together with data concerning food supply and food preparation, arranged so as to permit comparative study, would be a most valuable source of information concerning the influence of food supply, and the influence of either vigorous use or habitual disuse of the masticatory function.

The theory concerning the beneficial effect of active use of the teeth and jaws on their development is well established in the mind of the dentist, but to enforce it on the mind of the student and the public, and to correlate the interrelations of a diet low in tooth-building material, but making heavy demand on the masticating function and consequently insuring active capillary blood supply to all the parts involved, or one high in tooth-building elements but of low masticatory requirement, or the

different interrelations of these factors, a well arranged collection of prehistoric jaws will prove most valuable.

Such inspection as I was able to make of specimens collected in 1925 at Pecos and at Swart's Ranch, was most interesting in preliminary information. It revealed that at Pecos every pathological condition the modern dentist has to treat was common in this prehistoric period immediately under consideration. This was contradictory to the opinion dentists have long held that primitive races were comparatively free from some of our modern diseases because of dietetic and functional factors, but it is not surprising if we assume a mushy, soft diet and low calcium and phosphorus content.

The surprising thing was to find at Swart's Ranch the same condition except that malocclusion was practically absent in the specimens available there, in view of the fact that the diet is presumed to have been nearly the same.

This is cited merely as an example of the problems for the solution of which dental research organizations need a collection of specimens from many locations with correlated data as to food supply.

The Dental School of Columbia University is prepared to house and arrange such specimens and to offer opportunity for research to those interested. It will also gladly act as a clearing house for distribution of duplicate specimens to other schools and research associations who can use them to advantage.

After removal from the soil, such specimens rapidly disintegrate when left exposed to atmospheric influence without protection. At Pecos actual test showed that unprotected tooth enamel began to crackle from desiccation within two hours after excavation, and bone is frequently so friable that it cannot be removed from the soil until it is protected and stiffened. Teeth left exposed to the Southwestern atmosphere quickly lose so much of their enamel as to be valueless for research.

Thus far paraffin is the best medium found for protecting all such specimens.

For dental research and museum purposes the following routine is desirable:

1. Collect from each archaeological location specimens of

- (1) complete skulls,
- (2) complete jaws with the teeth in place,
- (3) parts of jaws with the teeth in place,
- (4) loose teeth (where feasible, keep the teeth of each skull separately).

2. Keep each specimen separately, with the number given the specimen in the archaeological records, so reference can be had to its data later, if desired. If dates ever become possible for such specimens, it will greatly add to their dental research value.

3. Paper bags of suitable sizes on which may be entered the data for each specimen, serve well for field purposes.

4. The best plan yet suggested for protection of specimens is the following, which is easy to carry out in the field, affords adequate protection from the disintegrating effect of varying degrees of humidity, and introduces no difficulties for a museum staff in its subsequent handling of the material.

5. The requirements are:

- (1) A supply of paraffin (the ordinary "Parawax" supplied by grocers and general stores for household use is excellent).
- (2) A clean pail or kettle in which to melt the paraffin, large enough to contain the specimens, sometimes a supplementary can or pail of small size is desirable for the small specimens. In the lower altitudes an improvised water bath comprising the kettle or pail for the paraffin, and a larger one for containing water into which the other can be set, is helpful in avoiding overheating of the paraffin.
- (3) Some wire gauze or mosquito netting, a small can with wire bail and perforated bottom, to facilitate dipping and easy removal of small specimens from the paraffin.

The paraffin should be used at a temperature not much above its melting point. If the specimens are placed in over-hot paraffin, it results in a considerable amount of bubbling, due to the rapid replacement of the air contained in the specimen by the hot paraffin. This quickly expanding and escaping air causes a condition simulating boiling, which exercises a disintegrating effect upon the specimens. In the higher altitudes the water bath does not work well because of its lower boiling point, and it is not necessary if adequate care is taken to avoid overheating of the paraffin.

Specimens should be dipped in the melted paraffin long enough

for them to take on approximately the temperature of the paraffin itself, which is indicated by the disappearance of the layer of partially hardened paraffin that will collect on the surface of most specimens when transferred from the cooler atmosphere to the paraffin.

In the case of fragile specimens, for which a layer of paraffin on the surface may be desirable as a protection against mechanical disintegration while in transit, it is frequently desirable to remove the specimens before the congealed layer on the surface shall have disappeared. In case it is desirable to add still more paraffin as a mechanical protection, this may easily be done by dripping it from any convenient applicator such as a stick, a bit of rag or absorbent cotton previously dipped in the melted paraffin. When this is to be done, the specimen should first be laid upon a piece of loose paper so there will not be risk of breakage of the specimen in prying it loose from the underlying board or bench top when the wax has hardened. This same process of dripping the melted wax onto a bone too fragile for removal without mechanical protection, or in some cases, the pouring of it from a tin cup supplied with a spout, is frequently helpful in protecting such specimens. The removal of surplus paraffin and any paper that may be incidentally attached in the process above described, is easily accomplished at the bench of the museum laboratory without damage to the specimen.

It is earnestly requested that all such specimens as above enumerated, be protected as described, packed in such a manner as adequately to protect them from damage in transit, and be forwarded by express, to

The Museum,
Dental School of Columbia University,
302 East 35th Street,
New York City,

accompanied by available data when possible, and always by statement of location from which they come, the name and address of the contributor. Express charges will be gladly paid and the specimens will be adequately cared for.

140 WEST 57TH STREET,
NEW YORK CITY

A NEW TYPE OF STONE KNIFE

By WALTER HOUGH

FOR several years data have been gathered concerning an unusual implement of chipped flint which in all probability is a knife. It is practically in the form of the flint knife, frequently called a spear head, but instead of being notched equally on both corners of the base, is notched for hafting on one corner, opposite the edge designed for cutting. The first specimen, of dark gray chert, coming to notice was brought by Mrs. Matilda Coxe Stevenson years ago from Taos, New Mexico, where it had evidently been used by the Pueblos as a fetish, in accord with their custom in regard to ancient stone implements. (Fig. 1, a). Several of these knives were found in a cave near Las Cruces, New Mexico, on the information of Dr. Nathan Boyd. These were of black obsidian. A third locality is in Texas, and two specimens of flint from the site are in the collection of Mr. Victor J. Evans of Washington, D. C. They were found in a mass of flint implements and chips dredged from a lake at San Marcos, Hays Co., Texas, in the southeastern part of the state (Fig. 1, c). Another specimen, from the eastern part of Travis Co., Texas, was secured by Prof. J. E. Pearce, of the University of Texas (Fig. 1, b). Another locality where several specimens have been found is Terry, Montana on the information of C. A. Kinsey, who sent a photograph of a specimen, the material of which is translucent stone, carefully worked (Fig. 1, d). On these data it appears that there is sufficient authority to regard this knife as a new type of flint implement and hitherto undescribed. It is much desired to call this form to the attention of museums and collectors in the hope of extending the range of this rare type of the flint knife.

Several knife-like specimens from the cliff-dwellings, made of the same material as the spatulate implements, are suggestive of the use of a diagonal cutting edge. The first of these has finger-grips formed in the handle and is evidently a very rare specimen (Fig. 1, f). The second is rounded and simpler and shows the diag-

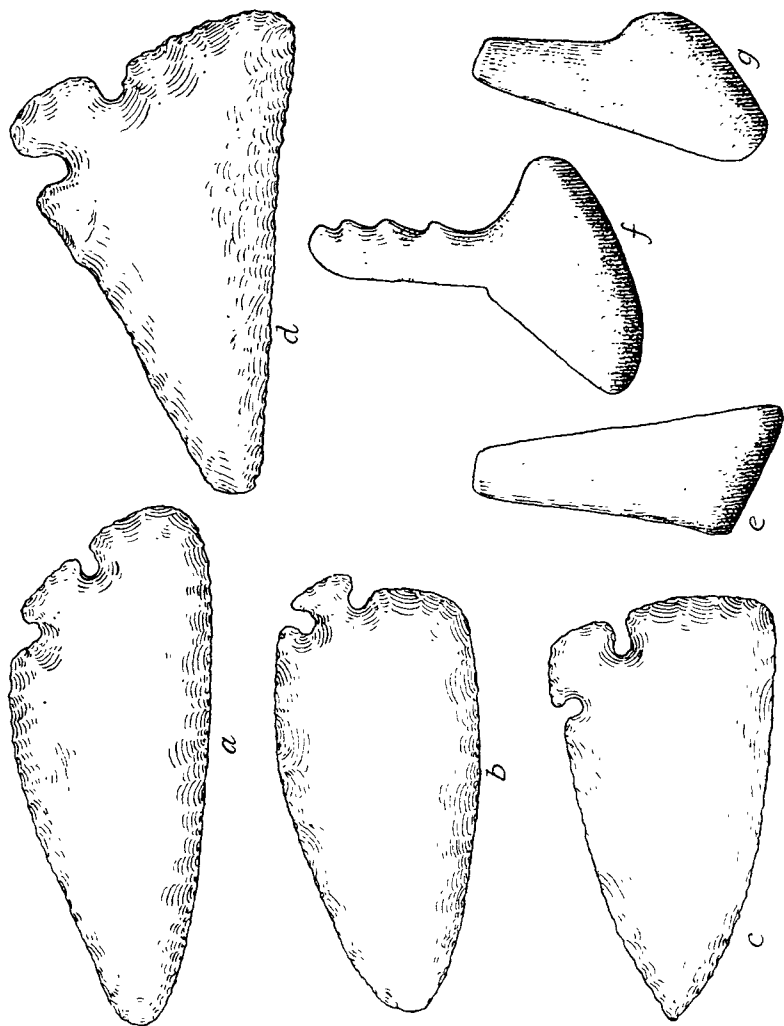


Fig. 1. Stone Knives. *a*, Toas, New Mexico; *b*, eastern Texas; *c*, southeastern Texas; *d*, Terry, Montana; *e-g*, cliff-dwellings.

onal edge (Fig. 1, e). The third is cut likewise with a diagonal edge (Fig. 1, g). They show the use of a knife-like tool for a motion combining pressure, scraping, cutting, and sawing, as shown in the stub ends of cuts made in bisecting saplings found by the writer in the Tularosa cave.

I consulted Professor Holmes on the hafting of this knife and he pointed out that the size of the nocks would indicate in case of wrapping on, as the arrow, a shaft or joining of rather small diameter, and that a larger hand portion would be difficult to wrap. The method of hafting, if rigid at all, is not apparent as yet. It may be that the nocks are for a thong by which the knife was carried, as in an iron leather-worker's knife collected by the writer in Mexico and mentioned in another place.

Moorehead illustrates a stone from Harakey or Quivera, New Mexico, collected by Mr. Brower, which is suggestive of the form under discussion.¹ The specimen may be a square base knife which has been broken and reworked. It is, however, in the area where most of the type occur. The Stockton curve implements also described by Moorehead² are more remotely suggestive and relate with the knife under consideration to Eskimo forms.

Common implements which have been used continuously by man are likely to show traces of their ancient origin or relate to a plane of culture. It has been pointed out by European archaeologists that there are many such survivals in use to this day where handicrafts are preserved. It is of interest, therefore, to collect the ordinary tools of crafts on account of their interlocking with ethnology and archaeology.

U. S. NATIONAL MUSEUM,
WASHINGTON, D. C.

¹ Moorehead. *Prehistoric Implements*. 1900. P. 83.

² Moorehead. *id.*, p. 262.

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ANTHROPOLOGY AT THE PHILADELPHIA MEETING AND PROCEEDINGS OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION

The American Anthropological Association held its twenty-fifth annual meeting in Houston Hall, University of Pennsylvania, Philadelphia, Pennsylvania, on December 28, 29, and 30, 1926, in conjunction with Section H, American Association for the Advancement of Science, and the American Folk-Lore Society.

Two meetings of the Council were held, with President Hrdlička in the chair.

COUNCIL MEETING, DEC. 28, 9:15 A.M.

The following reports were read and accepted:

REPORT OF THE SECRETARY

The proceedings of the last annual meeting of the Association were published in the AMERICAN ANTHROPOLOGIST for January-March, 1926. There has been no special meeting of the Association, of the Council, or of the Executive Committee during the year.

The Anthropological membership in the National Research Council is as follows:

Elected by the Association: to serve until July 1, 1927—A. Hrdlička, A. V. Kidder; until July 1, 1928,—N. M. Judd, Herbert J. Spinden; until July 1, 1929,—Robert H. Lowie, Nels C. Nelson.

Members at large (elected by the Division), to serve until July 1, 1927,—R. J. Terry; until July 1, 1928,—George Grant MacCurdy; until July 1, 1929,—Berthold Laufer.

The Anthropological membership in the Social Science Research Council is as follows:

To serve until April 1, 1927,—Fay-Cooper Cole; until April 1, 1928,—John R. Swanton; until April 1, 1929,—R. B. Dixon.

The Association has lost four members by death during the year: Herman Blatz, Professor Edward S. Morse, John Murdock, Dr. Saxton T. Pope. Seventeen members have resigned, four have died, twenty-one have been dropped, and one hundred and three new members have been added, making a net gain of sixty-one.

The membership is as follows:

Honorary members	3
Life members	13
Regular members	<u>714</u>
	730

The undersigned, having now served five years as Secretary, begs to tender his resignation. The duties of the office are not onerous, and result in most pleasant contacts with a wide circle of co-workers. It does not seem desirable, however, that tenure of the Secretaryship by any one individual should be unduly prolonged.

Respectfully submitted,

A. V. KIDDER, *Secretary*

REPORT OF THE TREASURER

Receipts

Balance on hand December 17, 1925.....	\$1733.82	
American Ethnological Society.....	\$ 815.00	
Anthropological Society of Washington	169.90	
Central States Branch.....	213.50	
Annual membership dues of A.A.A.		
1924.....	\$ 42.00	
1925	120.40	
1926	2527.24	
1927.....	289.16	
1928.....	6.00	2984.80
Sale of Publications	264.58	
Reimbursements	1144.87	
Interest.....	17.75	
Miscellaneous	58.53	5668.93
		<hr/>
		\$7402.75

Disbursements

Geo. Banta Publishing Co.:		
Printing.....	\$2825.10	
Postage.....	115.77	
Storage.....	70.00	3010.87
Editor's expenses		546.75
Treasurer's expenses		679.23
Secretary's expenses		89.86
Reprints.....		269.68
Memoirs		723.24
Purchase back numbers	40.50	5360.13
Cash on hand, December 8, 1926.....		2042.62
		<hr/>
		\$7402.75

Resources

Cash on hand December 8, 1926.....				\$2042.62
Due from sales:				
1925.....	\$1.25			
1926.....	231.68	\$232.93		
Due from dues:				
1924.....	\$12.00			
1925.....	108.00			
1926.....	523.00	643.00	875.93	
				\$2918.55

Liabilities

Membership dues for 1927 and 1928 already paid .	\$295.16			
Net excess resources over liabilities . . .	2623.39			
				\$2918.55

Cost of Publications

AMERICAN ANTHROPOLOGIST, vol. 27, no. 4				
Printing.....	Paid in 1925			
Distribution.....	\$5.70			
Storage.....	10.00			
Reprints.....	48.73			\$64.43
AMERICAN ANTHROPOLOGIST, vol. 28, no. 1				
Printing.....	1324.98			
Reprints.....	90.04			
Distribution.....	45.82	\$1460.84		
Reimbursements.....		404.72	1056.12	
AMERICAN ANTHROPOLOGIST, vol. 28, no. 2				
Printing.....	\$495.93			
Reprints.....	42.16			
Distribution.....	23.75			561.84
AMERICAN ANTHROPOLOGIST, vol. 28, no. 3				
Printing.....	479.97			
Reprints.....	60.31			
Distribution.....	7.11	547.39		
		12.70	534.69	
AMERICAN ANTHROPOLOGIST, vol. 28, no. 4				
Printing.....	\$524.22			

Reprints.....	28.44		
Distribution.....	21.24	573.90	
Reimbursements.....		4.21	569.69
Memoir, Number 32			
Printing.....	\$723.24		
Reimbursement.....	723.24		
<hr/>			
Net cost.....			\$2786.77
Postage for undelivered copies returned in 1926			1.65
Postage for publications sold to foreign cus- tomers.....			10.50
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Total cost.....			\$2798.92

PERMANENT FUND

Receipts

Balance Dec. 17, 1925.....			\$1632.08
Interest on Liberty Bonds (3), April 9.....	\$	6.36	
Interest on Liberty Bonds (1), May 13.....		2.13	
Interest on savings account, July 1.....		19.73	
Interest on Liberty Bonds (3), Oct. 9.....		6.39	
Interest on Liberty Bonds (1), Nov. 13.....		2.12	36.73
<hr/>			
Total.....			1668.81

Investments

Liberty Bonds.....	\$388.12		
Treasury Saving Certificates.....	60.00	448.12	
Cash in savings account.....		1220.69	
<hr/>			
			\$1668.81

The Association closes the year with all bills paid and about \$2000 on hand. In order to put the Association on a sounder financial basis the Treasurer would suggest the following measures of economy:

(1) To reduce the number of free separates allowed each author to 25. The present allowance is 50. This reduction would represent a saving of about \$135 per annum and would work no hardship upon the average author. There is ample precedent among other journals for the supplying of only twenty-five free separates to authors.

(2) Increase the charge for the Association's publications to \$6.00 per annum in the case of the thirty-three German libraries now receiving the Association's publications at \$1.00 per year. The

actual cost of producing and delivering the ANTHROPOLOGIST to these libraries was about \$112 during 1926.

The present financial status of the Association warrants the addition of a thousand dollars (\$1000) to the Association's permanent fund. This would leave a thousand dollars in hand to begin the new year, which, coupled with the income for 1927 should be ample for operating expenses. On the basis of operations for 1926 the publication of the AMERICAN ANTHROPOLOGIST for 1927 will require about \$2800. The salary of the editor's assistant will total \$540, the salary of the treasurer's assistant, if increased to \$35 per month, as advocated elsewhere, would total \$420, and the joint expenses of the editor's, treasurer's, and secretary's offices, apart from salaries, will be about \$500. This makes a total operating expense of something over \$4200. The income from members' dues, from sale of publications, and from interest for 1927 should total at least \$4800.

In closing I should like to concur with the Editor in his suggestion as seeking outside support for the publication of the Memoirs. A subsidy, such as that bestowed by the Maori Research Board upon the Journal of the Polynesian Society, would be highly desirable and would permit the publication of valuable papers too lengthy for the AMERICAN ANTHROPOLOGIST.

The Association closes the year 1926 better off financially by \$300 than at the close of 1925.

Respectfully submitted,

E. W. GIFFORD, *Treasurer*

The accounts of the Treasurer, E. W. Gifford, have been examined and found correct.

(Signed) R. H. LOWIE,
A. L. KROEBER,
Auditing Committee

REPORT OF THE EDITOR

During 1926, thanks mainly to Mr. Gifford's efforts, the AMERICAN ANTHROPOLOGIST appeared approximately on schedule time, the October-December issue being distributed early in November. It has not been possible to give equal attention to the expeditious printing of the two memoirs, received a year ago. One of them, however, Dr. Elsie Clews Parsons' "A Pueblo Indian Journal, 1920-1921" (Memoir 32), has appeared, while Mrs. E. S. Goldfrank's paper

on "The Social and Ceremonial Organization of Cochiti" is being paged at the time of writing.¹

The Editor regrets to report that, owing to an abundance of contributions little to be expected when he took office two years ago, many papers have been unduly delayed in publication. There is no immediate remedy in sight unless additional funds be secured from outside sources. Papers, often valuable ones, continue to pour in, and naturally the Editor does not like to discourage their presentation. Three considerations play a part in deciding what is to be used in a particular issue,—priority, news value, and length. The Editor strongly urges the Council to advise him (a) as to the desirability of applying for substantial annual grants to outside agencies, (b) as to supplementary or alternative means of coping with the situation. The greatest desideratum is undoubtedly the re-establishment of a regularly appearing Memoirs series to take care of long articles. The Editor was committed to the publication of several such during the last year, but seriously questions the propriety of continuing to run them under present conditions unless, as happened in one case, at the author's expense. Long papers should certainly be issued by the Association, but in appropriate memoir form.

The Editor's difficulties all go back to a single ultimate source,—inadequate funds. It is impossible for the Editors to devote more than a limited portion of their time to the publications of the Association. The Editor has one half-time assistant who is generally a graduate student. Obviously the salary is insufficient to keep any one incumbent permanently nor can one reasonably expect to get one who combines knowledge of anthropology with that of typing and proofreading at \$45 a month. Moreover, students have other duties and interests which from personal and professional points of view may be more important than routine office work. The Editor earnestly requests the members to take these circumstances into account and to pardon delays in the acknowledgment of letters or articles, the preparation of contributions, omissions in the list of new publications, the forwarding of separates, etc. Each of these jobs requires time. As soon as the Association is ready to equip an editorial office on the *Saturday Evening Post* pattern, the service rendered will be made correspondingly more efficient. In the meantime the Editor penitently, but not too penitently, admits shortcomings in

¹ It has since been issued.

the management of routine business and inquires whether, since the Association is unable to pay for a second half-time assistant, the members will take active measures to secure support for such additional aid from outside sources.

The Editor has no illusions as to the excellence of the ANTHROPOLOGIST. He does not consider it on a par with *L'Anthropologie*, the *Zeitschrift für Ethnologie*, and *Anthropos*. So long as some of the most eminent members rarely or never contribute even reviews, the quality of the journal cannot come up to the highest standard achievable. From the Editor's point of view, two kinds of articles are most welcome,—authoritative summaries of real contributions to knowledge, whether due to the writer or others, and brief discussions of theory. There are several such in the editorial drawers, but far too few.

A great desideratum would be the renewal of the annotated bibliography of Periodical Literature, which in former years was the peculiar service rendered to the Association by the late Professor Chamberlain. This would again require additional funds and co-operative effort on the part of the membership, but would be one of the greatest improvements in the magazine conceivable. A glance at Dr. Hrdlička's *Journal of Physical Anthropology* or Prof. Boule's *L'Anthropologie* indicates the advisability of resuming this section of the ANTHROPOLOGIST. However, it is a question whether the need of such summaries will be met by the new *Ethnologischer Anzeiger*. Duplication of effort is unprofitable; on the other hand, it remains to be seen how competently the *Anzeiger* will serve Americanist interest and to what extent it is likely to be accessible to our membership.

Respectfully submitted,

ROBERT H. LOWIE, *Editor*

It was moved and passed:

That the recommendation of the Treasurer that free separates to authors be reduced from fifty to twenty-five in number, be referred to the Committee on Publication with power to act.

That the matter of increasing the price of the AMERICAN ANTHROPOLOGIST to certain German libraries be referred to the Editor and Treasurer with power to act.

That the Treasurer be instructed to submit at the next annual meeting a list of the securities in the Permanent Fund.

That the Treasurer be authorized to increase the salary of a part-time assistant from \$25.00 to \$35.00 per month.

That the question of reinaugurating a section in the *ANTHROPOLOGIST* devoted to abstracts of periodical literature be referred to the Committee on Publication.

There were presented and accepted reports from the Committee on Relations between the Association and the National Research Council, the International Institute of African Languages and Cultures, and the Chairman of the Encyclopedia of the Social Sciences.

The following Committees were appointed:

On resolutions: A. V. Kidder, F. C. Cole, E. A. Hooton

On audits: R. H. Lowie, A. L. Kroeber.

COUNCIL MEETING, DEC. 28, 5:30 P.M.

113 new members were elected; their names have been incorporated in the list on p. 159 ff. January-March issue.

It was moved and passed:

That the present committees of Finance, Publication and Program be continued.

That the next annual meeting be held at Andover, Massachusetts.

That the Committee on Program be instructed to arrange the program for the Andover meeting in such a way as to realize the wish of the Council that this meeting be devoted largely to symposia and discussions of Policy.

That the Council approves the project for the preparation by the Division of Anthropology and Psychology of the National Research Council of an index of the *AMERICAN ANTHROPOLOGIST*.

That the Secretary be instructed to send telegrams conveying the greetings of the Association to Francis La Flesche, M. H. Saville and W. H. Holmes.

That a Committee be appointed to consider the possibility of holding summer meetings of the Association.

The Chairman appointed the following Committee on Summer Meetings: R. H. Lowie, Chairman, A. V. Kidder, F. C. Cole, H. C. Shetrone, A. Hrdlička.

ANNUAL MEETING, DEC. 29, 9:15 A.M.

The following list of officers for 1927 was presented by the Nominating Committee (appointed in advance of the meeting, and

consisting of Walter Hough, Chairman, J. A. Mason and R. J. Terry), was accepted by the Association, and the individuals were declared elected by a vote cast by the Secretary.

President: Marshall H. Saville.

Vice-President (1930): Fay-Cooper Cole.

Secretary: A. I. Hallowell.

Treasurer: E. W. Gifford.

Editor: R. H. Lowie.

Associate Editors: E. W. Gifford, F. G. Speck.

Executive Committee: A. Hrdlička, A. M. Tozzer, E. Sapir.

Council: G. Engerrand, W. Gates, P. E. Goddard, S. J. Guernsey, C. E. Guthe, H. U. Hall, E. S. Handy, C. L. Hay, J. P. Harrington, M. R. Harrington, L. W. Jenkins, A. V. Kidder, T. Michelson, W. F. Ogburn, B. F. Schappelle, J. B. Stetson, A. M. Tozzer, S. Trotter, E. P. Wilkins, W. Bradfield, E. H. Morris, T. W. Todd, F. H. H. Roberts, Jr., J. W. Cooper, W. K. Gregory, H. C. Shetrone (1930).²

Representatives from the Association to the National Research Council to serve for three years from July 1, 1927: F. Boas, F. W. Hodge

Representative from the Association to the Social Science Research Council to serve for three years from April 1, 1927: Fay-Cooper Cole.

Delegates from the Association to Section H, A.A.A.S.: Truman Michelson, C. E. Guthe.

The Secretary was instructed to transmit resolutions of thanks to the University of Pennsylvania, to the members of the local committee and to Colonel Muckle.

On Wednesday evening, Dec. 29, the Association held its annual dinner by invitation of Colonel John S. Muckle, at his home, Craig Hall, Haverford, Pa. Following the dinner Dr. Hrdlička delivered the Presidential Address: "An Anthropological Survey in Alaska."

At the general sessions the following papers were presented or read by title:

Waldemar Jochelson, The Palaeolithic and Neolithic Periods and the Transition of the Stone Age to the Age of Metal in Siberia.

Carl E. Guthe, A Method of Ceramic Description.

Aleš Hrdlička, The Most Recent "Ancient" and Other Men in America.

Herbert Williams Krieger, Archaeology of the Upper Columbia River Valley.

² The complete list of Council members, including those previously elected, will be found on p. 158 (January-March issue).

- T. R. Garth, The Will-Temperament of Full-Blood Indians.
Charles B. Davenport, Measurement of Men.
R. Bennett Bean, Stature in Some Old Americans of Virginia.
Raymond Pearl, Differential Fertility in the United States.
Truman Michelson, Notes on Physical Anthropology of the Eskimo of St. Lawrence Island.
M. J. Herskovitz, An Analysis of the Physical Form of Various Population Groups within the American Negro Population.
Mildred Trotter, A Report on Some Ancient Egyptian Vertebral Columns.
Bruno Oettking, The Cranio-Vertebral Border Region.
William L. Straus, Jr., The Relation of the Lower Extremity to the Vertebral Column.
George D. Williams, Demonstration of a New Cephalometer.
T. Wingate Todd, Skeletal Mortality Records.
C. J. Connolly, The Relation of the Orbital Plane to the Position of the Teeth.
Martin Luther, Some Preliminary Remarks on the Study of Finns and Lapps.
Isabel Gordon Carter, Further Proof of Changes in Bodily Form of American-Born Children.
Horace Gray, Increase in Stature of American Boys in the Last Fifty Years.
John M. Cooper, The Waswanipi.
Pliny E. Goddard, The Relationship Between Navajo and Apache.
A. Irving Hallowell, Recent Changes in the Kinship Terminology of the St. Francis Abanaki.
G. G. MacCurdy, The American School of Prehistoric Research in 1926.
Robert H. Lowie, The Origin of the State in Primitive Societies.
Walter Hough, Dolls and Anthropomorphic Images.
Margaret Mead, Etiquette and Taboo in Samoa.
Gladys Tantaquidgeon, Notes on Mohegan Folk-Lore.
Joseph McGoldrick, The Phallic Sheath Among the Parentintin Indians of South America.
Herbert J. Spinden, Maya Remains on the East Coast of Yucatan.
Harold S. Colton, A Survey of the Prehistoric Ruins West of the Little Colorado in Arizona.
Frances Dorrance, Report on Archaeological Survey of Eastern Pennsylvania.
John R. Swanton, Ceremonies and Ceremonial Grounds of the Creek Indians.
W. C. MacLeod, Seventeenth Century Economy and Finance as Determinants in the Fate of the North American Indians.
J. Frank Dobie, Legendary Riders of the Southwest.
Nathaniel Cantor, Rank in New Guinea.
R. S. Scammon, The Relationships Between the Duration of Prenatal Life, Childhood and Maturity in Man and Mammals.
Adolph H. Schultz, Observations on a Gorilla "Fetus."
Dudley J. Morton, Human Origin.
William K. Gregory, The Palaemorphology of the Human Head, Ten Structural Stages from Fish to Man.
Henry Field, Oxford University Expedition at Kish, Mesopotamia, Season 1925-26.
Neil M. Judd, The Evolution of Pueblo Bonito.
F. H. H. Roberts, Certain Small House Sites in the Chaco Canyon, N. M.

- W. K. Moorehead, The Etowah Culture Compared with that of Ohio and Illinois.
Frans Blom, Maya Work of Tulane University.
Oliver Ricketson, Jr., Three Maya Astronomic Observatories.
John E. Teeple, Maya Inscriptions: Stela C at Copan.
George O. Jager, The "Great Cycle" Glyph.
Mary L. Kissell, A Unique Salish Weaving Center.
H. U. Williams, Gross and Microscopic Study of a Peruvian Mummy.
D. S. Davidson, The Problem of the Family Hunting Territory Complex among the
World's Marginal Peoples.
F. G. Speck, Iroquois and Wabenaki Culture Relationships.
Frederick Johnson, Note on Showshoes of Eastern Massachusetts.
Melville Jacobs, The Genetic Relationship of Sahaptin and Lutuamiam.

There was also held a symposium on Oceanic and American languages, participated in by Drs. Michelson, Swanton, Dixon, Cole and Goddard.

A. V. KIDDER
Secretary.

ARCHAEOLOGICAL FIELD WORK IN NORTH AMERICA DURING 1926

The Committee on State Archaeological Surveys of the Division of Anthropology and Psychology of the National Research Council collects each year summaries of archaeological field work conducted by state agencies. To the present report there is also added a résumé of investigations by such museums and other institutions as have cooperated with the Committee by keeping it in touch with their work. The Committee is desirous of making this annual summary as complete as possible; it would therefore be very glad to receive information as to any archaeological work in progress or in contemplation by any organization or individual not here included.

The Committee was set up by the Division for the purpose of stimulating archaeological research by State agencies. Although it has no funds for the backing of specific projects, it has served as a fact-finding and correlating body; has supplied, when called upon, advice as to archaeological methods; and has always endeavored to foster the preservation of prehistoric monuments. Furthermore, it is ready to act as a clearing-house for information in regard to past, present, and future archaeological activities, the personnel of investigators, the whereabouts of collections, etc.

WORK OF STATE AGENCIES

Alabama. Archaeological activities in Alabama during the year 1926 have been confined to limited work by the Anthropological Society in the vicinity of Montgomery and in the western part of Walker County. Interesting finds of objects of sea shell continue to be made at the Catoma Creek Cemetery five miles west of Montgomery. A large pipe in the shape of the head and shoulders of a mink, and weighing fourteen pounds, has found its way into the collections of the Tennessee Valley Historical Society at Tuscumbia, Alabama.

Peter A. Brannon, Director,
Dept. Archives and History

Arizona. From January to June archaeological classes were held in the University and week-end field trips were taken in southern Arizona. Week-ends in May and all of June were spent in surveying and mapping prehistoric irrigation systems about the Casa Grande

ruins and Florence. August and the first part of September were devoted to a study of the early Pueblo culture in northern Arizona. An old round pit-house pueblo located in 1923 was investigated. There were also discovered the remains of another smaller pueblo on a ridge a little to the north. The excavation of a kiva 36 feet in diameter was completed and several rooms were dug. Everything found corroborated former investigations, which indicated an early pit-house type. The people were crude house builders and began the development of the ceramic art. Specimens of the early pottery were collected, the only types found in the ruins of the houses. From September to December courses were given in the University, and class excursions were conducted to prehistoric pueblos in southern Arizona. Investigations were made of the evidences of pleistocene man in our part of North America.

Byron Cummings,
Department of Archaeology,
University of Arizona

Illinois The University of Chicago has undertaken an archaeological survey of Illinois with two ideas in mind,—one the training of students, the other to recover as far as possible the prehistory of the state. One group worked in Jo Davies County in the extreme northwestern part of the state; the other in Will and Kankakee Counties near the Indiana border. For two months they spent the time making archaeological maps—locating all existing mounds and indicating former sites wherever definite information could be secured. They also examined all collections in the hands of local collectors, made notes, and photographed all type specimens. In September the whole group were brought together for a month's work in excavation near Galena. In the second week representatives from neighboring museums were invited to join in a three-day conference in the field. In Jo Davies County there were located about four hundred and fifty mounds, about two thirds of which have been disturbed. Conical mounds are in the majority but linear mounds constructed much like Fort Ancient are fairly common. One that extends for 1100 feet along the crest of a hill has long been called a defensive mound, but burials were found at frequent intervals and it seems to have been constructed for the same purpose as the conicals. There are several effigy mounds—bird and animal—in the county, but most have been cultivated so long that the details are largely lost. One "bear" (it may be a beaver) is still very plain, and there is a well defined

serpent mound which extends 260 feet. A pyramidal mound is reported in the region just to the south of the field covered by us, and it is claimed that several cist burials have been found near Galena but we saw none. A real puzzle was encountered near Hanover where more than a hundred conical mounds extend along the crest of a hill and terminate in two huge mounds. Seven of the conicals were opened without encountering anything which might give a clue to their purpose. Permission has been granted to open the large mounds next season.

Fay-Cooper Cole

Indiana. Systematic investigation of the mounds in Indiana was started last summer when an expedition under the auspices of the Indiana State Historical Bureau was headed by J. Arthur MacLean, Director of the John Herron Art Institute, Indianapolis, and work was begun on a large mound, over three hundred feet across its base and thirty-one feet high, situated near Fairbanks in Sullivan County, Indiana. This mound has been observed for a good many years, and references in regard to it have been published from time to time since 1870. Minor finds have been reported, but not until last summer was a systematic investigation undertaken. The work was financed by subscriptions from private individuals. Twenty-eight burials were opened, several of which were in excellent condition and similar in certain respects to those of the so-called Adena culture. With each burial was a votive offering which varied somewhat in character but included as a rule specimens of flint, stone, bone, tortoise shell and sea shell. The mound itself is an interesting formation, being composed, it would seem, of an outer area of heavy yellow clay or loess, supporting two wind-blown sand dunes on the north and south sides with a gully between filled with a formation of silt and lime. About fifty per cent of this soil is lime and only in this area have burials been found to date. Only a small area has been excavated thus far, but it is expected that the work will go on next season. This season's work will be published as a bulletin of the State Historical Bureau.

J. Arthur MacLean

Iowa. The season's work of 1926 followed the same lines as in preceding years, except that more time was given to field survey and correspondingly less to research in the literature. The area examined was mostly in northwestern Iowa, though an early spring trip was devoted to the Mississippi bluffs above Dubuque and the nearby

valleys of the Turkey and Volga rivers. Agriculture of recent years has encroached far too closely on the bluffs of the Mississippi and a number of mound groups noted by early writers have been destroyed. Some fine remnants are still in good condition. In northwestern Iowa numerous mounds and village sites were located, especially in the valleys of the Little Sioux and the Big Sioux. Farther eastward, sites on a number of the lake margins show evidences of Algonkian occupation.

Charles Reuben Keyes, Research Associate,
The State Historical Society of Iowa

Michigan. The plan organized four years ago in this museum for making a survey of the state and investigating the more promising localities has been pursued this season with considerable energy and with gratifying results. Mr. E. F. Greenman has been in the field since June to determine the builders and the uses of various "forts" and semi-inclosures that are quite numerous throughout all parts of the Lower Peninsula. Seventy-one inclosures are known, although many of them have been almost effaced. By far the greater number of these works are of the circular type. But ten or twelve are decidedly rectilinear. Doctor Paul Radin of New York was employed during July and August to undertake an ethnological survey. He spent the time in the field. He reports orally that the tribes, or some of them, show much more significant cultural relations with western peoples than was formerly supposed. Doctor Radin assembled a considerable volume of notes and facts which he contemplates embodying at once in a preliminary report to be published by the University. Of course his intensive work is only the beginning of investigations he is expected to pursue next season. The present writer traveled two thousand miles going from one locality to another, checking up "works", sites, travel routes, waterways and doing a little excavating. Especial attention is being given to early maps, chronicles, and government surveyors' records and field notes, with a view of mapping the state by counties, noting especially Indian trails. Abodes, burying-places, corn fields, sources of chert, rock carvings, mounds, and other earthworks, etc., will be checked in upon these maps. Charts in uniform scale of twelve counties are now nearly completed. In company with Doctor Radin a visit was made to the Beaver Islands in Lake Michigan, where particularly interesting and new data were obtained. Several hundred archaeological and ethnological specimens were added to the Museum's collections, such as

dugouts, paddles, baskets, bags, and basket-making implements, wooden mortars and pestles, snowshoes, household and sugar-making utensils, wampum, pot-sherds, "flints", stone tools, pipes, "ceremonials", maps, books, photographs, etc. A few extensive old corn fields which have escaped the farmers' plows, some of them comprising more than twenty acres each, were platted and modeled. As soon as the season of 1927 opens, field studies and observations will be resumed.

W. B. Hinsdale,
Museum of Anthropology,
Division of the Great Lakes,
University of Michigan

Minnesota. For lack of funds no archaeological field work has been undertaken by the Minnesota Historical Society during the current year. Plans have been worked out, however, for a state-wide survey of historic sites and markers, to be carried on during the next year or so, and archaeological sites, will, so far as possible, be included in the scope of the survey.

Willoughby M. Babcock, Curator,
Minnesota Historical Society Museum

New Mexico. Camp was established at Gran Quivira ruin on September 7, work was begun the next day and continued till September 21. In co-operation with the Department of the Interior, the Museum is planning to establish a local field museum in one of the rooms of the old monastery, and for this purpose the long room immediately south of the mission proper has been chosen. This room was excavated and made ready for next year's repair and installation. Aside from the work on the mission ruins, which is financed by annual government appropriation, some exploration work was carried on with museum funds. This work was confined to some trenching for undisturbed refuse piles and investigation of ruins reported on the Chupadero Mesa, about 14 miles southwest of the Gran Quivira ruins. For this work three Indians were brought from the Pueblo of Zia. In the first two trenches on the north and the west sides of the mission old walls were struck at the depth of 18 inches. No stratified refuse appeared, so the south side of the Pueblo ruins, near the mission, was dug into. A trench running east and west about 15 feet, with another trench running into it from the south slope, revealed a deposit of loose rocks with an occasional pot-sherd clear to the bed-rock, 5 feet below the surface, but no

ashes or other household refuse to make occupational strata. The next trench was sunk into the north side of the main building of the old Pueblo and here well stratified deposits were found, causing hopes to run high for the finding of a key to the sequence of Gran Quivira occupations, until the workmen struck the fireplace of an old abandoned kiva about 4 feet below the surface, marking the place as filled in with material from, probably, the last occupation. The fireplace was found on the last work-day and the kiva was not cleared out, but next season's work will show how it compares in type and size with the other kivas already excavated. The farmers around Gran Quivira have long told of a place on the Chupadero Mesa which they describe as "The Indian Burial Ground", because of the many rocks standing out of the ground like tomb-stones. During a reconnaissance trip to this region thousands of these stones were found to mark the foundations of small community buildings of from two to five and more rooms, extending over an area of several acres, the rooms being from twenty square feet to over a hundred square feet in dimensions. No signs were found of adobe bricks, but the ground around the stones was of an adobe nature, so it might be possible the walls were built of puddled adobe that has all been washed away. Excavation of similar ruins further to the north, near the Montezuma Spring, has revealed flag-stoned floors a few feet under the present surface with burials under the floor. The place investigated this year was, for lack of any known name, called Pueblo Viejo, and as the place was very inaccessible for an automobile, no tools were brought for digging. A good collection of surface sherds was secured, however, and proved to consist of less than one percent of any other ware but Black-on-White. In addition to the work at Gran Quivira, the Museum conducted excavations for two weeks at Puyé. The work consisted mainly in clearing a small group of cave dwellings at the base of the cliff. In the course of excavation, a considerable quantity of pottery and other material was recovered, which will be used for permanent exhibition in the field museum to be established at Puyé in 1927. A survey was also made of several archaeological sites within the state of New Mexico, in order to determine the advisability of including them among the sites now owned, developed and protected by the State.

Lansing Bloom, Assistant Director,
Museum of New Mexico and School of
American Research

New York. The Rochester Municipal Museum has undertaken to carry out the archaeological survey inaugurated by the State Museum, and is actively cooperating with the N. Y. State Archaeological Association. Special attention has been given to locating sites of the several Algonkian cultures and to tracing the migration route of the Seneca. During the 1926 season a site of Lamoka Lake, Schuyler County, has been examined intensively. Here a village site with a culture layer over four feet thick attests the persistence of a settlement for perhaps as long as a century. It is of the second Algonkian period and is pre-ceramic. The principal industry of the village seems to have been the drying of fish. The beveled adze occurs here but the grooved axe seems to be entirely lacking. On another level above the lake some crude pottery is found and also other implements more characteristic of the third Algonkian period. During the autumn of 1926 an examination was made of the headwaters of the Genesee and Alleghany where a number of Iroquoian sites of the period prior to European contact were observed. Evidence seems to be conclusive that the Seneca group entered the territory where it was found in colonial times, from the south. At that time, certainly not more than 700 years ago, New York was the domain of the third period Algonkian peoples. The Municipal Museum in its survey is sifting out the culture complex and endeavoring to define each type. This work is principally in the hands of A. C. Parker, Director of the Rochester Municipal Museum, (formerly State Archaeologist) and of William A. Ritchie, Staff Archaeologist.

A. C. Parker

Ohio. Archaeological activities of the Ohio Archaeological and Historical Society, for the season of 1926, were confined to a continuance of the examination of the great central Mound of the Seip Group, located near Bainbridge, Ross County, Ohio. Exploration of this tumulus, a part of the largest of the several groups of the so-called Hopewell culture in the state, and, next to the central mound of the Hopewell group proper, the largest individual Hopewell-culture mound in Ohio, was begun in 1925. During the first season's examination, a striking group burial, comprising the uncremated skeletons of six individuals—four adults and two children—was unearthed. This group burial occupied a rectangular structure of logs, suggested a charnel house, over and above which covering a space of approximately 14 by 16 feet, had been placed a canopy of

woven fabric, "pegged down" and held in place by more than 100 large bone awls, or skewers. With the burial was found an individual bearing an artificial copper nose; many thousands of pearl beads; ornaments of marine tortoise-shell; and, beneath three large copper breast-plates and preserved by the chemical action of the copper, portions of burial shrouds of woven fabric, in colored designs. Occupying a position above the skeletons, at an elevation of 3 feet and upwards, were found five very large stone tobacco pipes, in the images of birds and animals. These pipes were foreign to the culture of the builders of the mound, and are typical of the territory centering in Tennessee. In addition to numerous typical burials and artifacts, there was disclosed this past summer a ceremonial or sacrificial offering, comprising a finely fashioned copper axe, weighing 28 pounds; 12 copper breast-plates, rectangular or shield-shaped, the latter laid in such a manner as to cover the axe, overlapping one another as shingles on a roof. Wrapped around the copper axe, and preserved between the overlapping plates, were many thicknesses of woven fabric, of at least four varieties. One of these is a coarsely woven fabric of bark, a second displays fragments of designs in color, a third is woven of flat splints of what appears to be southern cane from the cane-breaks, while a fourth variety is very similar to homespun linen. The last named is in a remarkable state of preservation, being quite strong and without discoloration. One mass of it, preserved between two of the copper breast-plates, comprised 28 thicknesses, and exhibited a finished edge, or selvage. Large areas of suede-like leather, sewed with sinew, and in a striking condition of preservation, lay beneath the large copper axe. Outstanding features of individual burials were the miniature objects, such as breast-plates, shell food vessels and copper axes, placed with the remains of children. A novelty was the finding, with the remains of a child of ten years, of a number of chlorite spheres, of the size of, and apparently serving the same purpose as, the present day marbles. These are engraved with carefully executed conventional designs. At least another season will be required to complete the examination of the central Seip mound, which is 250 feet long, 150 feet wide and 30 feet in height. The securing of vertical cross-section drawings and photographs of this exceptionally large mound represents an unusual accomplishment and entailed no little time and danger.

William C. Mills, Director

Oklahoma. We had a small crew at work, last winter, in Boone County, Arkansas, practically all of the work being done in two caves. Fine collections were secured from each, including stone and bone implements and weapons, fragmentary earthenware utensils (some of which have been restored) and skeletal remains. The latter have not yet been submitted to a competent osteologist. One noticeable feature of the crania is the fact that eighty per cent of the specimens seem to have had but twenty-eight teeth. Some exceptionally fine bone implements were secured, including long, slender, highly polished needles that might be used for knitting, bone fish-hooks, etc. Many of the smaller flint points were also very delicately wrought. During the months of May, June and July, the field force was employed on excavation work on the site of an Indian village, located on the west bank of the Arkansas River, in the extreme northern part of Oklahoma, within five miles of the Kansas line. As to chronology, the borderline between archaeology and ethnology, is represented as the site dates back slightly less than two centuries. Apparently, this village was subsidiary to a French trading-post located two miles below on the river bank. The ruins on this site consist of low, circular tumuli, each being the ruin of a timber-framed, dome-shaped lodge or hut. The work was done cooperatively, Mr. E. W. Marland, of the Marland Oil Company and the Marland Refining Company, having financed the undertaking with the understanding that the collections secured should be divided, half to go to a museum he has projected at Ponca City. Fine collections of bone and stone implements were secured, the former being in a very fair state of preservation; with these also came much in the way of vestigia from the wares obtained by barter from the French traders of the first half of the 18th century, so that the collection as a whole is representative of a primary contact between the Stone Age Caddoans (Wichita, Towakony, Waco, Keechi, etc.) with the European culture from France. The primitive culture had remained practically unaffected by that of exotic origin, except that stone axes, hatchets, hoes and knives had largely been replaced by iron tools designed for the same purposes and made by the smith at the trading-post. The number of "snub-nose" or "turtle-back" skin-dressing picks far exceeded that of any other site hitherto worked or examined by us, the abundance of the same furnishing conclusive evidence of the zeal and industry of the women of the village in working buffalo hides into finished robes on a wholesale

commercial scale. Incidentally, it is worthy of mention that this village site was on the upper part of a hill which, for a distance of nearly a mile, has a nearly uniform slope of about twenty degrees toward the river bank. The top of this hill has an elevation of from 125 to 150 feet above the level of the river at low water. At a distance varying from 150 to 300 feet from the edge of the channel of the river, the sloping surface of the hill is broken by a precipitous, cliff-like face of massive limestone strata, for a distance of fully three quarters of a mile, averaging nearly forty feet in height throughout that distance and having but few places of ascent and descent. It is believed that buffalo may have been killed in quantity at times by driving them over this cliff, though we have not as yet attempted to secure proof of this conjecture. Recurring to the use of the "snub-nose" or "turtle-back" skin-dressing pick, it is worthy of remark that this represents a bit of culture which must have been absorbed or borrowed from the people of some other stock, since the Caddoan peoples of two or three centuries previous to the period during which this site was occupied do not seem to have been familiar with the use of such an implement. The clay pipes, which might be roughly described as resembling two cones, joined near their apices, were found to be practically identical with those of the ancestral stock of a few centuries earlier. The earthenware pottery—all in fragmentary condition—shows many of the same forms and kinds of decoration but is so much coarser than the earlier Caddoan ceramic wares as to indicate a pronounced cultural decadence. One find was a piece of bright red ware, quite thin, with decorations scratched upon the surface by a hard, pointed stone after it had been burned, thus identifying it with the wares secured from the Proto-Siouan mound which our party had excavated near the confluence of the Elk, or Cowskin, and Neosho, or Grand, rivers, in northeastern Oklahoma, in the summer of 1925.

Joseph B. Thoburn, Curator,
Oklahoma Historical Society

Pennsylvania. In March, 1924, the Wyoming Historical and Geological Society, Wilkes-Barre, Pennsylvania, decided to undertake an archaeological survey of Eastern Pennsylvania, in view of the scientific necessity of such a comprehensive study and exploration of the territory, since less is known about the Indian occupation of Pennsylvania than about that of almost any other state in the Union.

The original limitation to Luzerne County, being too arbitrary, the plan was extended to the natural one of the Susquehanna watershed. But as this left uninvestigated, in the Eastern part of the State, only the fringe of nine counties bordering the Delaware River, and as the territory represents a unit of tribal culture, it was decided to include the 47 counties lying between the Alleghany Divide and the eastern boundary of the state.

The plan for the survey consists of three parts. The first, a paper survey, to ascertain the possibility of archaeological remains in the state, is the only part completed and has brought definite proof of the opportunity and need of this study. This is only preliminary to the second part, the field work, to be based on the findings of the paper survey, and of research in printed and manuscript records and books. This, together with the third part, the editing and publishing of the results in a series of atlases, histories, descriptions of sites, collections, artifacts, etc., must await the establishing of the large fund needed. The paper survey was made by sending out various types of circular letters, containing question blanks and broadsides, to different groups of people, such as postmasters, foresters, grange and society officers, leaders of groups of people, Boy and Girl Scout leaders, individual collectors and known experts in the region. More than 13,000 such letters were mailed and the returning question blanks and letters brought an astounding amount of information. Of the two thousand questionnaires returned, (one out of every six mailed) nearly eight hundred brought a great deal of information, practically one thousand more gave considerable, while less than three hundred brought nothing. More than four hundred and fifty separate offers of help in exploring the sites came from especially informed individuals. Ownership of over twelve hundred collections, mostly large ones, is now listed, ready for study. Many local archaeologists marked trails and sites on maps of their own special districts, and gifts of books and manuscripts were made to the society. The newspapers throughout the region published and sent out articles, explaining the survey and asking all individuals who had found Indian artifacts to communicate with the society. Through these means, it was possible to locate 1900 definite sites on a map of the State, stamping each locality named, with a small green circle. This indisputably determines the need of the investigation and gives ample basis for it. Other localities will be found as investigation proceeds. The returns are all arranged under county heads

and the information they contain is being catalogued on a colored card system, according to the kind of material reported, and arranged geographically. The names of all offering help are listed for the later field work. The survey has been endorsed by the Pennsylvania Federation of Historical Societies, Pennsylvania Historical Institute, the American Anthropological Association, the Philadelphia Academy of Natural Sciences; the National Research Council, the Museum of the American Indian, the American Museum of Natural History, the New York State Museum, and the Rochester Municipal Museum. The leading archaeologists, anthropologists, and historians of the country have expressed approval and interest in the undertaking. Working on the premise that \$150,000 (\$3,000 per county) in money and five years in time will be required, it is proposed to divide the financial responsibility between organizations in the counties and individual donors, to be paid in at one time, or on a five year bases. All articles found are to be left with a recognized, functioning organization in each county, and each organization and individual donor of a sum not less than \$500 is to receive a set of the publications. An administrative body is to be formed of representatives of the contributing organizations and individuals, and the actual investigations are to be made by trained workers under a Director General. As the possibility of securing this cooperation depends upon widespread publicity, arrangements are being made for presenting the subject to organizations with a state-wide interest, and county representation, by addresses, circular letters, and personal interviews. Photostats of the map showing the 1900 sites have been distributed to historical societies, and interested individuals, and a large poster, showing the map and explaining the Survey has been placed in the Pennsylvania Building at the Sesqui-centennial. A postcard size reproduction of the map has been made for use in arousing interest.

Frances Dorrance, Director

South Dakota. During the summer of 1923 we continued our investigations in the eastern part of the state. About twenty mounds were opened along the west sides of Big Stone Lake Traverse in Roberts County. Maps were made of groups not excavated. All examined were burial mounds; and twenty-five skulls, including a few skeletons were added to the anthropological collection in the University Museum. A group of mounds were mapped that are located at the mouth of the Turtle Creek near the James River,

Spink County. Another group was found along the Firesteel Creek in Davison County. These two groups are about the western limit of habitation of the mound builders in the state. Near the mounds on Firesteel Creek there is another village site of a different culture and considerable excavation was done in the refuse heaps and around the old lodge circles. The pottery fragments and artifacts gathered resemble somewhat those of the Arikara but their origin is still in doubt. Then, too, no Arikara village has heretofore been found away from the Missouri River. In 1924 two mounds of a group of six were opened which were located on a high terrace along the Missouri River in the western part of Yankton County. Both were burial mounds and one contained sixteen skeletons that had been deposited together. None were intact, which showed that originally they were scaffold burials. Several weeks were spent in work in Ludlow Cave of the "Cave Hills" district of Harding County. Sixty cubic yards of the old floor of this cave was screened. The formation was sandy and the old floor had built up about three feet. Three cultures were discovered in this cave, the Sioux near the top, the material consisting of trading beads, brass or copper rings and wristlets (including one gold finger ring) fragments of buffalo skins and two scalps of white men. About two and one-half feet down and near the entrance there were many bone tools; while three feet down, and on or near the original floor and extending back thirty-five feet from the entrance we found several hundred exquisite arrow-points of semi-transparent material, bone beads, shell beads of fresh water and marine shells (the latter from the Pacific Ocean), a few beads of native copper, elk teeth used as beads or pendants, and two fragments of woven baskets or mats. Many of the arrowpoints still had the sinews around the neck of the base that had fastened them to the shaft. The culture of the older floor can hardly be related to the Arikara or Mandans, but rather to some western tribe that spent a winter or summer here. There is a spring of water near. Across a ravine from the cave and on an exposed rock wall there are many grotesque figures of animals. These were photographed or drawings were made for use in a final report. Later on this season we discovered a large quartzite quarry in the southern part of the Black Hills. This was in an almost inaccessible place northeast of Edgemont, Fall River County. This old prehistoric quarry covered an area of at least 160 acres and exhibited many deep excavations. Millions of tons of surface rock had been removed by primitive methods to

reach the suitable material below. This quarry is equal to, and belongs in the same period as those near Manville and Lusk, Wyoming. Other small quarries were found along French Creek in Custer County. A few days were spent in 1925 in making photographs and drawings of pictographs on cliffs along the Cheyenne River within four or five miles of the above-mentioned quarries. During 1926 only one mound was excavated, which is located on the west side of Oakwood Lake, Brookings County. While our work at this mound is not completed, it yielded two skeletons and a stone bar amulet or a boat stone; if the former, it was not finished, as it lacks holes at the ends. As far as known it is the only piece of the kind found in the state. Most of our notes are ready for publication, but additional work should be done before attempting a preliminary report of the state, and we are waiting for funds and time.

Wm. H. Over, Curator

Tennessee. In February and March, 1926, with a force of six men, the State Archaeologist spent twenty-seven days in field work upon the farm of Hill Taylor in Cheatham County, in the area commonly known as Mound Bottom. There are fourteen distinct earth mounds in this area, the largest of which, called the Temple or Sacrificial Mound, is 25 feet high, 265 feet long, and 156 feet wide. It is a truncated pyramidal structure. Partial excavation disclosed extensive beds of ashes, floor levels, etc. Stone graves, eighty-six in number, were opened in the vicinity. Ten days were spent in Sewart County in the neighborhood of Dover, in the examination of a very extensive quarry, where flint nodules were extracted, and the preliminary chipping of implements was done. Across the river from Dover, on the Hogan farm, eighteen stone graves were opened. In May and June examination was made of caverns in Pickett and Overton Counties. Evidence of human occupancy was found in the form of ash-beds, bone and stone implements and skeletal remains. Assistance in financing the above work was rendered by Beloit College, and Phillips Academy, Andover. A report has been published in *Journ. Tenn. Acad. Sci.* Vol. I, No. 3.

P. E. Cox, State Archaeologist

Texas. We have continuously investigated the Burnt Rock Mounds of Central Texas and during the last ten years our students, now scattered throughout the State, have been sending in specimens and information from outlying parts of the State. This gives us an

ever increasing knowledge of the general situation and will enable us to prosecute work to good effect once we begin active field work in a continuous way.

J. E. Pearce,

Department of Anthropology,
University of Texas

Utah. A party from the Department of Anthropology, University of Utah, excavated during the autumn months in two burial mounds associated with pueblo ruins west and southwest, respectively, of Blanding, San Juan County. About 200 specimens of pottery were recovered, principally black-on-white ware. A few specimens occurred of black-on-red, and of corrugated, the latter in the form of large jars. Thirty graves were opened; these were all so shallow that the skeletons had suffered almost complete disintegration, crumbling as soon as touched.

A. A. Kerr, Director.

Wisconsin. Full reports of the 1926 archaeological survey and other activities have not yet been received by the Wisconsin Archaeological Society from its field workers. The frequent rainy periods of the spring and summer interfered very greatly with the surveys and investigations planned by the Executive Board of the Society early in the year. In June a reconnaissance was made of certain districts in several northwest Wisconsin counties which has resulted in both securing valuable archaeological data and in stirring up local interest in state surveys. During the summer and fall, field work was conducted in different parts especially of Dane, Winnebago, Marquette, Dodge, and Jefferson Counties. Work about Rock Lake in Jefferson County has been completed and a preliminary report is being published. A report on Columbia County is also to be published. Mr. C. E. Brown has given talks and lectures in a number of localities with the idea of arousing public interest in the state survey. Two quite valuable archaeological collections, both from Milwaukee County, have been added to the State Historical Museum. The preservation to the public of Indian mound groups and other notable remains has kept pace with exploration work. Additional mound groups at Madison and in other parts of the state have been marked with tablets. The marking of others is now being planned for. The construction of golf courses in many localities in Wisconsin has provided an additional means for preserving local antiquities in public grounds.

Charles E. Brown, Director.

Canada. Harlan I. Smith, Archaeologist, of the Victoria Museum, Ottawa, which occupies the position of a National Canadian Government Museum, continued the work of restoring, preserving, and re-coloring totem poles in the Skeena River Valley of British Columbia. He secured notes on numerous archaeological sites, and visited two new petroglyph sites near Prince Rupert. One is on the sloping rocks of the beach of a little bay in the south side of an island on the main channel between Prince Rupert and Netlakatla. The other is on the mainland north of the same channel, but slightly nearer Netlakatla. It represents a human form at length. A practical method has been developed of casting pictographs in concrete for museum display. W. J. Wintemberg made an intensive exploration of a pre-European palisaded Tionontati village site in Simcoe County, Ontario. The site is situated on the more or less level top of a hill about forty feet high. The vegetal products found in the refuse heaps of the site consist of carbonized corn (cobs and kernels), beans, sunflower seeds, squash stems, and plum pits. Arrowpoints were predominantly of the triangular type. Quantities of potsherds were collected as well as stone adzes and celts, antler flaking punches, bone awls (one made from a human ulna), bone netting-needles, stone and pottery pipes, and beads of stone, bone, freshwater and sea shells. Although a few scattered human bones were found, no graves were discovered. The culture possesses many features in common with that of sites in Victoria County and more remotely with that of the Roebuck village site and Hochelaga. The material found suggests that the Tionontati and Hurons should be included in what Skinner calls the Eastern or Mohawk-Onondaga group rather than with their near neighbors, the Neutrals of the Western group.

Later in the season two supposed ossuaries on the Edmonds farm in Nottawasaga township were tested and found to be natural hollows. The cemetery in Norfolk County (about nine miles west of St. Williams), where a perforated human skull had been found was not excavated. The pottery secured at the site shows that it was of the same culture as the Uren village site, in Oxford County, which was probably occupied by early Neutrals. A site examined at Lake Medad did not disclose anything which would indicate that the people who inhabited it, were Iroquois from New York state, rather than Neutrals as is generally believed. The site has been too well dug over by local collectors to be worth the expense of excavation.

Harlan I. Smith.

WORK OF MUSEUMS AND OTHER INSTITUTIONS

American Museum of Natural History. Field researches in America were limited to the archaeology of the Southwest, three expeditions being organized: (1) Ogden Mills Expedition. Mr. Earl H. Morris in charge of this project explored a prehistoric salt mine at Camp Verde, Arizona, and carried on systematic excavations at the White House Ruin in Canyon de Chelly. (2) Mrs. William B. Thompson Archaeological Expedition. Under the direction of Mr. Erich Schmidt systematic excavations were conducted at sites near Superior, Arizona, a continuation of the work of the previous year. (3) Fifth Charles L. Bernheimer Expedition. Mr. Charles L. Bernheimer conducted explorations in person in the general region north of Navajo Mountain, west of Piute Canyon, and east of Bridge Canyon. A number of promising archaeological sites were located, and incidentally important palaeontological discoveries were made. Finally, a new natural bridge, which has been named Hawkeye Natural Bridge, was discovered.

*Clark Wissler, Curator-in-chief,
Division of Anthropology.*

University of California, Department of Anthropology. Mr. W. Egbert Schenck, honorary assistant curator, Museum of Anthropology, studied the large private collection of archaeological material in the possession of Mr. Elmer J. Dawson and joined Mr. Dawson in archaeological work in the Delta region of California. Baron Erland Nordenskiöld, professor at the University of Gothenburg and lecturer at the University of California during the fall semester of 1926, conducted archaeological excavations near Lodi. He was assisted by a number of graduate students at the University of California. This investigation was financed by the Museum of Gothenburg, of which Professor Nordenskiöld is director, and the specimens belong to that institution. Mr. Julian H. Steward, a graduate student of the University of California, continued researches in the Columbia Valley in the region of The Dalles, this work being made possible by the generosity of Major Henry J. Biddle of Vancouver, Washington.

Robert H. Lowie, Chairman

Columbia University, Department of Anthropology. Located upon an island in the Oconee River swamp eleven miles south of Milledgeville, Baldwin County, Georgia, are two mounds. This land is part

of the plantation owned by Mr. J. W. Shinholser of Macon, Georgia, and is known as Indian Island, the site of an old Creek town. The smaller of the two mounds, height 10 feet, circumference of base 278 feet, was opened and proved to be less rich in finds than had been expected. The skeletal remains of the five burials could not be saved because of the state of decay. Potsherds, beads, and broken stone implements, though not abundant, constituted the types of material found.

Margaret E. Ashley,
Johnson Hall, Columbia University

Museum of the American Indian, Heye Foundation. An expedition collecting archaeological specimens in Salvador was headed by Dr. S. K. Lothrop. We have also had expeditions in Sonora and Sinaloa, Mexico, under the leadership of Mr. E. H. Davis and Mr. G. W. Avery. During the first five months of 1926 we continued our researches in Pueblo Grande, Nevada, under the direction of Mr. M. R. Harrington. Mr. Donald Cadzow has spent four months in Saskatchewan, and its vicinity, collecting ethnological material from the Indians still residing there. Mr. Charles O. Turbyfill has excavated some mounds during the summer in North Carolina. We have also continued local archaeological researches on Long Island and other points in the vicinity of New York City by Mr. Foster H. Saville. We also had two ethnological expeditions in the lesser known parts of Brazil, headed by Colonel Fawcett and Mr. Gow-Smith.

George G. Heye, Director

National Geographic Society. On October 15, the Society concluded the sixth season of its explorations in Pueblo Bonito, the greatest of the prehistoric villages in Chaco Canyon, northwestern New Mexico. From their inception in 1921, the Pueblo Bonito expeditions have been under the direction of Neil M. Judd, Curator of American Archaeology, U. S. National Museum. The major efforts of 1926 were directed as during the previous season, towards search for deeply buried walls belonging to earlier periods of occupancy than that represented by the final ground plan of Pueblo Bonito. Four principal periods of constructional activity are represented in existent remains of the ancient village; during each of these successive periods both the type of masonry and the outline of the village changed. The recovery of these earlier ground plans—so essential to the complete history of the settlement—has been one of the Society's objectives

during the field seasons of 1925 and 1926. It has been found, also, that the pottery manufactured and used by the Bonitians underwent a noticeable evolution in technique at the same time that more substantial types of masonry were being developed. In addition to the principal explorations in Pueblo Bonito, researches inaugurated in 1924 in Pueblo del Arroyo were brought to an end the past season. The relationship between Pueblo del Arroyo and Pueblo Bonito is now fairly well established. Two small-house sites in the upper drainage of Chaco Canyon were also excavated in 1926, under permit from the Department of the Interior. The purpose of these latter investigations was to ascertain the probable position of such lesser habitations in the chronology of the Chaco Canyon area. Geological and botanical investigations were also continued in a further endeavor to determine the extent of those geophysical changes which apparently have taken place since abandonment of Pueblo Bonito. Each phase of the Expedition's researches has been enriched by new data, obtained during the recent field season. Doctor A. E. Douglass, of the University of Arizona, also made further progress in his "tree ring" investigations, under the auspices of the Pueblo Bonito Expedition. Although final conclusions have not yet been reached, the large number of beam sections recovered from Pueblo Bonito and Pueblo del Arroyo, together with additional specimens from other localities in the Southwest, leave Doctor Douglass still hopeful that an absolute date may yet be placed upon Pueblo Bonito.

Neil M. Judd,
Director Pueblo Bonito Expedition

Peabody Museum of Harvard University. The exploration of Swart's Ranch Pueblo in the Mimbres Valley of southwestern New Mexico was continued by Mr. and Mrs. C. B. Cosgrove, under the general supervision of Dr. A. V. Kidder. During this season's work 33 rooms were cleared, making 116 rooms in all that have been explored. The excavations were carried beneath the floors of the rooms, sometimes to the depth of 9 feet before disturbance of the soil by human agency disappeared. Seven of the rooms were of early construction and were below the level of the main pueblo, one being of the pit-house type with an inclined passage extending from the room to the surface of the ground. As the work progressed toward the north end of the ruin, several larger rooms were encountered. The masonry became more massive. An innovation appeared here

in the construction of small openings in the inner walls, too small for a person to pass through but suitable for communication and for passing small articles from one room to another. Two hundred and thirty burials were uncovered with the usual offerings of pottery, beads, and other trinkets. Nearly all of the burials were below the floors of the rooms, the bodies being interred in a semi-flexed or closely flexed position. Some 200 pottery vessels were recovered, decorated in the beautiful patterns typical of the Mimbres culture. The remainder of the collection consisted of small articles of bone, stone, shell and turquoise.

A cave $8\frac{1}{2}$ miles from this pueblo was also excavated. It was situated in a side canyon tributary to the Mimbres River. Potsherds, fragments of basketry, and fabrics of various kinds were recovered, showing conclusively that they belong to the Mimbres culture.

Dr. H. J. Spinden, in connection with the Spinden-Mason Archaeological Expedition, carried on work in Middle America for a portion of the year. From Belize the Expedition skirted the coast northward along the Yucatan Peninsula, making excursions inland by means of rivers. Ruins of about 50 buildings were discovered, some of which were of great interest. From Yucatan the party went eastward and southward along the northern coast of Honduras visiting the Bay Islands and examining the ancient cemetery under the high limestone cliffs. Reaching the Plantain River on the mainland it was ascended and the sites along its shores examined. A collection of pottery, grinding-stones, and other implements was secured from these sites which is now on exhibition in the Museum; also a collection of flutes, drums, carrying bags, and other objects from the Puya Indians, who accompanied the Expedition up the river.

Mr. W. B. Cline continued his investigation and survey of the ancient earthworks in the Sudbury Valley of Massachusetts, a considerable number of which are new to local archaeologists.

C. C. Willoughby, Director

University of Pennsylvania, Department of Anthropology. In connection with the ethnological survey of Labrador and the Northeast, an approach is being made to the archaeological problems of the area. Surface conditions are also being observed in the region of lower Delaware.

Frank G. Speck, Director

*Survey in Arizona.*¹ The survey is limited to a specific area, about forty by forty miles, lying between the Little Colorado River and the San Francisco Mountains, extending north from the Santa Fe Railway to Black Mesa, half way to Tuba City. Within this area it has been my aim to plot as accurately as possible every site and describe briefly the size and condition. In most cases I have been able to locate the section boundaries even on the Painted Desert up to the edge of the Navajo Indian Reservation. Over most of the area I had as base maps the land office plots and the excellent maps of the Coconino National Forest. On the reservation the maps are poor and the errors of the plot greater. Over seven hundred ruins have been placed on the map. The general conclusions from this study are embodied in a paper in the hands of the Bureau of Ethnology. This year I have a few more ruins to add. The survey began in the summer of 1916 and was continued in 1919, 1921, 1923, 1925, 1926.

Harold S. Colton, University of Pennsylvania

Phillips Academy, Andover, Department of Archaeology. Work begun in 1925 was continued last spring at the famous Etowah site in Northern Georgia. Mrs. Tumlin, the owner, permitted extensive excavations. About 50 graves were uncovered, photographed and mapped, making a total of 100 for the two seasons. By the use of ambroid and paraffine some fabrics and portions of wooden handles of tools were preserved. Several highly decorated gorgets of shell, great quantities of bone heads, copper plates, on which are human figures and a long delicately chipped flint of problematical form, constitute the chief finds. Several observers suggest a parallel between the human figures on the gorgets and coppers with those on monuments in Yucatan. Certainly the resemblance is striking. A large monolithic axe and a flint sword some 20 inches in length, on each side of which are worked projects in flint (requiring great skill) are two of the best finds. A collection has been presented the State Museum at Atlanta. The seventh season of excavation at the ruins of Pecos, New Mexico, lasted from June to September. Survey work and a short series of stratigraphic tests were carried on at the main ruin, but the greater part of the summer was spent in digging at a pre-Pecos site about one-half mile to the southwest. The ruins are

¹ Dr. Colton's archaeological work has been conducted by him personally in the cause of other researches (A. J. K.)

those of a very large pueblo of straggling form, and presumably of low elevation. The walls, being of adobe, proved hard to follow, but some fifty rooms were excavated, and about as many skeletons taken out. Mortuary offerings of pottery, pipes, beads, etc., were recovered. The ceramic remains belong to a period earlier than that of Pecos proper; among them are many pieces obtained in trade from the Little Colorado area, or made locally by immigrants. Evidence was found that the pueblo had been partly burned, and possibly it was destroyed by hostile Indians. It seems likely that it was inhabited by the direct ancestors of the Pecos, who abandoned this comparatively unprotected site for the greater security of the Pecos mesa.

Warren K. Moorehead, Director

San Diego Museum. The greater part of 1926 has been devoted to work in the Museum. It is planned to begin, if possible, the exploration of the counties of San Diego and Imperial before the end of this year. It is known that at the time of the Spanish arrival this country was occupied by Indians who have since been making a plain pottery; but as scattered traces of a decorated black-on-white pottery have been brought in, it is desired to follow up these traces. Excavations are also planned for the Mimbres region in New Mexico, during April and May, 1927—tracing back the earlier pit-house development, and segregating it from the later period by excavating in sites that show no traces of the later surface houses.

Wesley Bradfield, Associate Director

The Southwest Museum, Los Angeles, Cal. Arizona. The summer season was spent in a superficial survey of Sycamore and Beaver Creeks, eastern tributaries of the Verde. A minimum of excavating was attempted as potsherds were chiefly desired, the masonry and house-types having already been described by Fewkes and Mindeleff. The factor of persecution, as a cause of depopulation, is strongly emphasized in this area, where one finds ruins 1500 feet above the nearest water and where almost every canyon shows some evidence of fortification; the barren quality of the culture should probably be ascribed to the same cause, rather than to lack of ability or industry on the part of the former occupants. The later period is marked by the ubiquitous red ware of the Gila regions, both porous and smoke-blackened, and the coarse brown ware which resembles the pottery of Southern California. There is also a Black-on-White period of

open house-sites which undoubtedly antedates the red ware period and which would probably repay further investigation.

California. During October and November of 1925 investigation was carried on along the northern borders of the Chumash country, where the Coast range dies out into the San Joaquin Valley. The Stone Cultures of the coast are all represented in the Cuyama Valley but, as on the coast, are lacking in significance owing to the absence of stratigraphy. It was hoped that the monotony of Stone Culture might be vitalized by more significant cave material but this quest was unfortunately terminated by early rains. During the winter of 1926 several sites were visited in the vicinity of Santa Barbara, both along the coast and in the Santa Ynez Valley, all of which tended to a growing conviction that new light on Californian aboriginal culture must be sought in caves rather than along the open coast, where probably 90 per cent of the culture has disappeared.

Harold S. Gladwin, Acting Curator of Archaeology

West Texas Historical and Scientific Society. The Society has its headquarters and museum at Sul Ross State Teachers College, Alpine, Texas. Its major activities extend throughout that portion of west Texas known as the Trans-Pecos or Big Bend section. This territory should be of particular interest to the anthropologist because of its proximity to the Cliff-dwelling area to the west and the Plains district to the east. The first anthropological investigation undertaken was a survey resulting in the location of 115 sites showing evidence of former Indian occupation. Data concerning these sites have been collected in the form of field notes, maps, photographs, drawings, and museum specimens. The whole Trans-Pecos area is characterized by a rugged topography, many of the peaks being over 8,000 feet above sea level. This broken country has afforded an opportunity for the second study, namely that of dry rock shelters containing prehistoric relics which, under ordinary conditions, would long ago have perished. The shelters have yielded sandals, basketry, wooden implements, beads, evidence of the foods used, a little pottery (now being further investigated), skeletal remains, as well as the expected variety of stone artifacts and camp refuse. A third study has concerned the pictographs and petroglyphs of which record has been made of some sixteen locations. Examples in the district range from a single small graph, to groups containing a drawing over twenty feet high. The future work of the Society contemplates publication

and a continuance of the museum and field work with particular attention to a complete investigation of several typical sites, in order that a full record of past cultures may be made, and the data secured placed at the disposal of those who may be interested in study or comparisons.

Victor J. Smith

United States National Museum and Bureau of American Ethnology. Excavation and repair of Elden Pueblo, 6 miles east of Flagstaff, Arizona: A large collection of pottery was recovered, and the walls of the building, of which nearly 40 rooms were excavated, were repaired and strengthened with cement. This work was directed by J. Walter Fewkes, Chief, Bureau of American Ethnology. Survey and explorations of a group of aboriginal remains near Marksville, La.: A scarcity of specimens was noted, and only traces of bones were found in the graves. This work was conducted by Gerard Fowke. There was an archaeological reconnaissance of the upper Columbia River Valley, Washington, where numerous sites were explored. Kasaan National Monument, Alaska, was examined by H. W. Krieger, Curator of Ethnology, U. S. National Museum, with a view to restoration; conditions, however, were found to be very discouraging, owing to recent fires and the continuous process of rotting and disintegration of the totem poles, etc. Archaeological reconnaissance of Louisiana and Mississippi: A number of mounds were examined, many earth mounds and shell heaps being found throughout the low-lying coast of Louisiana. In addition to cultural material collected, a number of undeformed skulls were obtained. This work was conducted by H. B. Collins, Jr., Assistant Curator of Ethnology, U. S. National Museum. Exploration of fossil beds in the vicinity of Melbourne and Vero, Florida, for fossil bones and possible human remains: The main object of this exploration, undertaken by J. W. Gidley, Assistant Curator of Vertebrate Palaeontology, U. S. National Museum, was to verify the observations of a previous expedition and to obtain any new evidence possible. Several mounds were visited and examined. A survey was also made of mounds south of Melbourne. Archaeological reconnaissance of Alaska and Islands of Bering Sea, for the purpose of tracing all possible clues as to man's antiquity, and his old migrations in these regions: The trip extended for over 900 miles along the Yukon; to the Islands of St. Michaels, St. Lawrence and the Diomedes in the Bering Sea;

and along the coasts of the Seward Peninsula and Arctic Alaska from Golovin Bay to Point Barrow. A large collection was gathered of archaeological and skeletal material, and a number of old sites of human occupations were located. A series of photographs and observations was made, which will help to settle the problems of the racial relation of the Indian and the Eskimo. This survey was directed by Aleš Hrdlička, Curator of Physical Anthropology, U. S. National Museum.

J. W. Fewkes, Chief, Bureau of Ethnology

A. V. KIDDER

ANTHROPOLOGICAL NOTES

REPORT OF THE DELEGATES OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION TO THE SOCIAL SCIENCE RESEARCH COUNCIL FOR THE YEAR 1925

At the close of the winter meeting of 1924 the Council of the American Anthropological Association accepted the invitation to join the Social Research Council and the following representatives were appointed: Doctors Wissler, Wallis, and Cole. At present the Research Council consists of the following organizations: American Historical Association, American Political Science Association, American Sociological Society, American Statistical Association, American Economic Association, American Psychological Association, and American Anthropological Association. These seven organizations are brought together for the purpose of promoting the interest of scientific research in the field of social inquiry, particularly in cases where problems overlap the boundaries of one or more of the special fields concerned. It is believed that with the seven organizations now united it will be possible to advance the prospects of social science by the study of methods, and by coordination of scattered types of inquiry otherwise independent and isolated.

During the year 1925 the Council appointed a special committee on Problems and Policy for the purpose of considering certain special questions already before the Council, as well as others, and of canvassing the general policy to be followed by the Council. This committee held a ten days' session at Dartmouth during the summer and as a result of its deliberations it was decided to continue it as a standing committee with power to appoint special advisory committees to consider the formulation of problems, to analyze problems into parts susceptible of scientific treatment, to study the character and scope of the investigations which seem desirable, and to suggest agencies whose cooperation can profitably be enlisted in the work. On recommendation of this committee the Council adopted the following general policies in respect to research:

A. Ordinarily it will be the policy of the Council not to undertake investigation directly, other than preliminary studies;

B. Ordinarily the Council should deal only with such problems as involve two or more disciplines;

C. Generally it should be the policy of the Council to serve only as a clearing house in matters of research in the social science field.

Furthermore it was determined by the Council to undertake the gathering of pertinent information concerning research projects, personnel, funds and endowments available for research. It was understood that the Council would cooperate with any other agencies interested or engaged in similar enterprises in overlapping fields.

During 1925 the general administration expenses were cared for by the Russel Sage Foundation, but with the growth of the Council activities other foundations have indicated a willingness to participate in the work. In this year funds were made available to the Council for the purpose of awarding fellowships to advanced students desiring to carry on research in the field of social science. Funds to cover the fellowships for a period of five years have been provided by the Laura Spelman Rockefeller Memorial. In the year 1925 the sum of \$49,000 was available for this purpose. (These awards have already appeared in the *AMERICAN ANTHROPOLOGIST*.)

A number of special studies were undertaken by committees of the Council, among which were: a) A study of the relation of the mechanization of industry to migration; b) Study of human migration—in cooperation with committee of the National Research Council; c) A committee was appointed on Indexing and Digesting the session laws of various states, as an aid in the study of American legislation; d) A committee on Social Science Abstracts; e) A committee on Survey of Social Science Agencies, with special reference to method, and with the hope of developing closer coordination of social research projects.

While still in an experimental state the Council has made substantial progress both in more effective organization and in dealing with specific problems. With the addition of Anthropology and Psychology to the Council many new projects closely related to these disciplines are being undertaken, as the report of 1926 will show. Suggestions for making the Council more valuable to the social sciences or to those interested in the social implications of natural science will be welcomed.

FAY-COOPER COLE,
for the Committee.

DUKE DE LOUBAT

The death of the Duke de Loubat in Paris was announced on March 1, 1927. Joseph Florimond Loubat, who received his ducal title from Pope Leo XIII, was born in New York City on January 31, 1831, and was hence ninety-six years old at the time of his death. He was the only child of wealthy parents and spent much of his time in Europe where he was educated chiefly at Heidelberg.

Loubat early took an interest in anthropology, history, and especially archaeology; he also did much toward financing scientific enterprises. His principal benefaction was the gift of \$1,100,000 to Columbia University. Other gifts to Columbia included valuable books and manuscripts and two prizes to be awarded every five years by the University for the best works written in English on the history, geography, archaeology, philology or numismatics of North America. Loubat endowed three professorships of American Archaeology; one at Columbia University, one at the University of Berlin, and one at the College de France in Paris. He also performed a signal service to American Archaeology in causing to be reproduced in facsimile several of the more important Aztec codices.

Loubat's services to the Roman Catholic Church were so highly appreciated that in 1893, Pope Leo XIII conferred on him the title of "Duke de Loubat." The French Government had already made him a "Commandeur de la Légion d'Honneur"; later, in 1907, he was elected a foreign associate member of the French "Académie des Inscriptions et Belles-Lettres."

Although living in Paris during the last thirty years and more of his life, the Duke de Loubat retained membership in the American Museum of Natural History, the Metropolitan Museum of Art, the New York Historical Society, and the following New York Clubs: Union, Knickerbocker, Union League, University, and New York Yacht and Tuxedo Club. He never married.

GEORGE GRANT MACCURDY

LÉONCE PIERRE MANOUVRIER

One of the world's leading anthropologists, Léonce Pierre Manouvrier, died at his home in Paris on January 18, 1927, in the seventy-seventh year of his age. He is survived by his widow and one son.

Manouvrier was born at Gueret, Creuse, on June 28, 1850, and received his degree of M. D., with the distinction of *Laureat*, from

the Faculty of Medicine, Paris, in 1881. He began his professional career as an assistant to the noted anthropologist Paul Broca in the Broca Laboratory. After Broca's death, Manouvrier succeeded to the Directorship of the Laboratory which then became one of the laboratories of the *Ecole des Hautes Etudes*. This laboratory under Professor Manouvrier continued to be a center to which students and specialists from all over the world came. At the time of his death, Manouvrier also held two other positions, namely, Director of the Physiological Laboratory of the Collège de France and Professor in the *Ecole d'Anthropologie de Paris*. He had been General Secretary of the *Société d'Anthropologie de Paris* since 1902.

As an author, Manouvrier, who always signed himself simply as "L. Manouvrier," has left approximately 150 original memoirs and papers on anthropology and related subjects. These include memoirs on Anatomy and Physiology; Morphological variations of the Human Brain, of the Skull, and of the Skeleton; Human Evolution; Abnormal Variations of the Human Body; Relation of the Volume and Form of the Brain to Intelligence; Proportions of the Human Body; Anthropometry; Anthropological Technique; Psychological Concepts; Will; Temperament; Aptitudes. His memoir on *Pithecanthropus erectus* was translated into English by the present writer while the latter was one of his students in the Anthropological Laboratory of the *Ecole des Hautes Etudes*.

Professor Manouvrier was the recipient of many honors: *Chevalier de la Légion d'Honneur*; Honorary Member of the Anthropological Societies of Berlin, Bologna, Coimbra, Florence, London, Moscow, Rome, St. Petersburg, Stockholm, Vienna, and Washington. Professor Manouvrier was the one foreigner chosen to represent Anthropology on the lecture platform of the Louisiana Purchase Expedition, St. Louis, in 1904.

GEORGE GRANT MACCURDY

YALE UNIVERSITY
New Haven, Conn.

SAXTON TEMPLE POPE

Saxton Temple Pope, surgeon, archer, Indian student, died August 8, 1926. Born in Texas in 1875 at a frontier army post, Pope graduated in medicine at the University of California, in 1899, returning to the same institution in 1912 to teach surgery. Into the

remaining fourteen years of his life were crowded a professional career, research investigation, a busy professional practice, the direction of medical organizations, war work, travel and big game hunting, an intensive practical and historical study of archery, many friendships, and a happy family life. Of special interest to anthropologists are his books, "Hunting with the Bow and Arrow," and three monographs issued by the University of California between 1918 and 1923: "Yahi Archery," "The Medical History of Ishi," and "A Study of Bows and Arrows." Learning the rudiments of his archery from the last member of the Yahi tribe, Pope went on not only to killing bears and lions with arrows, but to important studies of the structure of bows, the flight and penetration of arrows, arrow releases, and the nature and effect of the materials used for bows, backings, strings, shafts, featherings, and heads. His investigations in these directions are based primarily on original experiments, supplemented by culling of the scattered literature. Pope was an eminent surgeon, a brilliant teacher, a most delightful lecturer, an incisive and vivid writer. As a man he was energetic, original, self-reliant, unwaveringly loyal, and modest. He left no enemies and only the warmest of friends.

A. L. KROEBER

G. A. SCHWEINFURTH. The great botanist and explorer of Africa, G. A. Schweinfurth, was born at Riga in 1836 and died at Berlin, September 19, 1925. He played an important part in the study of the Stone Age in Egypt, Palestine, and Tunisia. His writings on this subject appeared chiefly in the *Zeitschrift für Ethnologie* and the *Verhandlungen* of the Ethnographical Society of Berlin. (S. R., *R. Arch.*, XXIII, 1926, p. 124.)

Amer. Journal of Archaeology

MUSEUM, UNIVERSITY OF MICHIGAN

This winter, construction will be begun upon a new Museum building which will house the collections in Natural Sciences and Anthropology. Every effort is being made to provide this building with the most modern equipment for the proper handling and study of the collections. The Museum of Anthropology will occupy the fourth floor and will have storage and office rooms, as well as a large exhibition hall for synoptic exhibits. The Museum is divided into five

divisions with the following names: Archaeology, Ethnology, Physical Anthropology, The Orient, and The Great Lakes. Each of these divisions will have a large room so equipped with storage cases as to insure proper preservation of specimens and greatest possible facility of access. Each of these rooms will also have laboratory tables equipped with hot and cold water, electric, gas, and compressed air connections, and various filing units for books, catalogs and charts. The Curator of each division will have an office of his own in which there will also be laboratory facilities. The general rooms of the Museum include a cataloging and conference room, a preparation room, and an office set aside for the use of visiting anthropologists. The floor space occupied by the Museum totals about eight and a quarter thousand square feet, of which a little more than sixteen hundred has been assigned to the division of the Great Lakes. Present plans call for the occupation of these rooms about July of 1928.

INSTITUT D'ETHNOLOGIE

The Institut d'Ethnologie (Executive Committee: Messrs Finot, Lévy-Bruhl, Mauss, Meillet, and Rivet) announces the following courses for the academic year, 1926-27: Descriptive Ethnography, Marcel Mauss; Descriptive Linguistics, Marcel Cohen; Physical Anthropology, Paul Rivet; Prehistory, Abbé Henri Breuil; Linguistics and Ethnography of Eastern Asia and Oceania, Jean Przyluski; African Linguistics and Ethnography.—

Among the courses in anthropology and kindred branches offered in affiliated institutions connected with the University of Paris may be mentioned the following: Races of the French Colonies, R. Verneau; Religion of Uncivilized Peoples, M. Mauss; Ethnography, Religion and History of Central America, especially of Guatemala and Yucatan, M. Raynaud; Origin, History, and Present State of the Sudanese Civilizations and Languages, M. Labouret; Dialects and Customs of French West Africa, M. Labouret; General Sociology, M. Fauconnet; History, Political and Social Organization of Madagascar, G. Julian; Geography, History and Institutions of Far Eastern States, M. Granet; General Linguistics, M. Vendryes; Prehistory, G. Renard. M. Capitan is to lecture on Peruvian Art, on Human Origins in Central America, the Antilles, Colombia and Venezuela, and on Remote Ethnic Accessions to America.

THE CATHOLIC ANTHROPOLOGICAL CONFERENCE

The Catholic Anthropological Conference was organized on April 6, 1926 for the purpose of promoting (1) the ethnological training of candidates for mission work and (2) research and publication by Catholic missionaries, specialists, and other students. The officers for 1926 include the Rt. Rev. Thomas J. Shahan, D. D., Rector, Catholic University of America, D. C. (President); and Rev. John M. Cooper, D. D., of the same university, (Secretary-Treasurer), to whom inquiries concerning membership, questionnaires, etc. may be addressed. The Conference has issued mimeographed sheets for the guidance of missionaries, with suggestions as to literature, specific field research, and a simplified phonetic system for the transcription of as yet unrecorded languages. For the present, manuscripts will be published in English, but suitable articles in any of the more common European languages will be accepted and translated.

We cordially congratulate those active in organizing the Conference on having called into being what may develop into as effective an instrument for the acquisition and diffusion of anthropological knowledge as *Anthropos*.

THE ANTHROPOLOGICAL SOCIETY OF PHILADELPHIA has elected the following officers for 1926-7. President, Prof. E. M. Fogel; Vice-Presidents, Mr. D. S. Davidson and Dr. J. Alden Mason, all of the University of Pennsylvania; Secretary, Mr. E. P. Wilkins. The program of the past year included addresses by:

Dr. E. H. Westerman

Dr. Edward Chiera

Dr. Leo Frachtenberg

Dr. Herbert V. Williams

MISS FRANCES DENSMORE has returned to her home in Red Wing, Minnesota, after an absence of ten weeks in the field. During the latter portion of that time she recorded the songs of Indians gathered in the hop fields at Chilliwack, British Columbia, where they are employed as hop pickers. Songs were obtained from Indians living on the west coast of Vancouver Island, at Squamish and Fort Simpson, as well as on the Skeena, Nass, Thompson and Fraser rivers and in other localities. This regional study of Indian music yielded interesting results for comparison among the localities under observation, and for comparison with tribes previously studied. The

early portion of the season was spent at Neah Bay, Washington, where songs of the Makah, Quileute and Clayoquot Indians were recorded.

DR. MARGARET MEAD delivered a lecture on "Rank in Samoa" on Oct. 25, 1926, before the joint meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences with the American Ethnological Society.

DR. PAUL RADIN delivered a lecture on "The Ottawa Indians of Michigan" on November 22, 1926 before the meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences in conjunction with the American Ethnological Society.

On October 19, 1926, an archaeological society was formed at Trujillo, Peru, for the study of the pre-Inca civilizations, especially that of the Gran Chimú. Major Otto Holstein was elected president of the new society.

THE MUNICIPAL MUSEUM, Rochester, N. Y., conducted archaeological work during October, 1926, at sites along the headwaters of the Genesee River, with particular reference to tracing the migration route of the Seneca-Iroquois.

Mr. Parker obtained facts in support of the former conclusion that the Seneca people came into this area from the south and southwest. Much of the sub-Iroquoian pottery is either absolutely plain or is cordmarked over its entire surface, showing a strong Algonkian influence. It is totally unlike the "arrived" forms of the cognate Mohawk and Onondaga. The smoking pipes are trumpet-bowled like those of Jefferson County and of certain Chautauqua County sites. None shows the elbow bend, however, such as the third period Algonkian employed.

The site at Lamoka Lake, previously examined, received a more detailed study this year. The extensive ash beds and refuse heaps there were opened and numerous implements discovered. This site is not only pre-Iroquoian but is pre-ceramic Algonkian. Its position is somewhere in the second period, and it may date back several thousand years.

PROFESSOR WILLIAM HENRY HOLMES, director of the National Gallery of Art, was presented on December 1, his eightieth birthday, with a volume containing one hundred and fifty personal letters of felicitation from intimate friends and those colleagues and co-workers

who during the past sixty years have been closely associated with him in the fields of geology, anthropology, exploration, and the fine arts.

THE MUSEUM OF THE AMERICAN INDIAN, New York, is practically ready to open the first unit of its new annex. This unit, one of twelve which it is proposed to erect, will be opened upon the return of the director of the museum, George G. Heye, from Europe. This three-story storage annex, located in the Bronx at Eastern Boulevard, Jarvis Street and Middletown Road, is to receive the surplus material from the overcrowded storage vaults in the main museum building. The new unit will serve primarily as a storehouse, photographic laboratory and workshop, with only a few exhibition cases on the ground floor.

MR. MILES G. BURKITT has been appointed University Lecturer in Prehistory in the Faculty of Archaeology and Anthropology recently established at the Universe of Cambridge.

APPOINTMENTS for the year 1926-1927 in the anthropological division of the Institute of Psychology, Yale University, New Haven, have been announced as follows: Dr. Paul Radin, research fellow; Dr. Beatrice Blackwood, international fellow from England; H. D. Skinner, Rockefeller Foundation fellow from New Zealand; research assistants, Dr. Sophie de Aberle, Emily Marion Pilpel, Helen Heffron Roberts.

THE ROCKEFELLER FOUNDATION has offered to appropriate to the Bernice P. Bishop Museum of Honolulu for Polynesian anthropological research sums amounting to \$50,000 over a period of five years, providing that an equal amount be raised for the same purpose from other sources.

D. JENNESS is investigating and collecting relics from the sites of ancient Eskimo habitations on the Alaskan and Siberian coasts of Bering Sea. Bering Strait has been a route for migration of aboriginal peoples between Asia and America and is a favorable place for the study of these migrations and the spread of Asiatic ethnological influences among the Eskimo of Northern Canada. In the course of this work, study will be made of modern Eskimo culture and language, particularly for the purpose of augmenting a "Comparative Grammar and Vocabulary of the Western Eskimo Dialects," which Mr. Jenness is compiling.

C. M. BARBEAU is continuing a study of the social organization, religion and legends of the Tsimshian Indian tribes of Skeena river, upon which he has been engaged for some years. He is also collecting information concerning the totem poles of these tribes.

HARLAN I. SMITH is continuing the work of restoring and preserving totem poles in the Skeena river area. Owing to decline of Indian social organization under the influence of white civilization, these interesting relics are rapidly deteriorating and in danger of complete disappearance. Last year the Canadian National Railways, the Department of Indian Affairs, the Parks Branch, Department of the Interior, and the Victoria Memorial Museum took prompt action to preserve the remaining totem poles. In the course of this work, Mr. Smith is also studying and collecting archaeological specimens for the museum.

A. E. PORSILD AND R. T. PORSILD are being sent by the Department of the Interior to the country just east of the Mackenzie river delta to investigate conditions for the introduction of reindeer.

Canadian Field Naturalist

The following papers were presented at the autumn meeting of the National Academy of Sciences held in Philadelphia on Nov. 8 and 9, 1926:

Elden Pueblo: J. WALTER FEWKES.

The object of the communication was to announce the discovery, by archaeological methods, of a prehistoric pueblo which had never been described. This ancient pueblo is situated six miles east of Flagstaff, Arizona, and about two hundred yards west of the National Trail Highway. An attempt is made to indicate the affinities of its former inhabitants as shown by the objects found illustrating the arts and customs of these people.

This pueblo was excavated during the period from June to September of the present year. It was practically unknown to any scientific man before May, although the artificial appearance of the clearing in the pines had been recognized as the site of a settlement from the time Flagstaff was settled by the white people.

The name "Elden Pueblo" was given to the ruin by the author on account of its neighborhood to Elden Mesa, an eastern spur of the San Francisco Mountains. Its form is rectangular in shape, oriented north and south, measuring one hundred and fifty feet

long by about one hundred and twenty-five feet wide. It contains one ceremonial room corresponding to a kiva, which was used for councils and religious purposes. The masonry of the walls is perhaps the crudest of that of all the pueblos. Many of the stones that formed the walls were megaliths, unworked and set on edge. It was found necessary to cement the top of the walls in order to prevent the water from percolating through the structure; in this way the rocks were fastened in place; only a few of them were squared or set in series. Apparently the wall of the structure was two stories high and with the exception of one opening there were no lateral entrances.

Some physical characteristics of the American Negro population:

MELVILLE J. HERSKOVITS (introduced by Professor Franz Boas).

Studies of the physical anthropology of the American Negro show, after a number of generations of crossing, the formation of a relatively definite type. This type in spite of its heterozygous character, is quite homogeneous, and has been effected by a social selective mechanism involving the desirability of Caucasoid traits, dark men choosing light-colored wives. It is important, however, to investigate differences within this population which occur with differing environments, various places of birth, and different occupations, and such differences are analyzed in this paper.

Science

FATHER WILHELM SCHMIDT, founder and until recently editor of *Anthropos*, has accepted the post of Director of the Museo Laterano Missionario-Etnologico in Rome, an outgrowth of the Vatican Mission Exposition of 1925. Fathers Pankratius and Schulien have been appointed as assistants, and temporarily Father Martin Gusinde of the Museo in Santiago de Chile has been collaborating with Father Schmidt. The collections are housed in the Palazzo Laterano.

Anthropos, 1926, 21:996.

To assure the permanency and further development of the *American Journal of Physical Anthropology* this journal has been, by mutual consent and agreement, transferred from its founder and publisher, Dr. Aleš Hrdlička, to The Wistar Institute of Anatomy and Biology. This transfer will be effective January 1, 1927.

There will be no changes in the scientific policy of the journal.

Dr. Hrdlička will continue as editor, and all communications intended for publication in the *American Journal of Physical Anthropology* should be sent to him at the U. S. National Museum, Washington, D. C.

For the present the journal will be published on the 30th of March, June, September, and December. Each number will contain about 125 pages, or 500 pages to each volume.

In order that numbers may be increased in size, should this be necessary, the journal will be sold by the volume, and not by the year.

Price, per volume of 500 pages, \$6.00, Domestic: \$6.50, Foreign.

Subscriptions and orders for back numbers should be sent direct to the publishers:—

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY,
THIRTY-SIXTH ST. AND WOODLAND AVE.,
PHILADELPHIA, PA.

CORRECTION

In the October-December, 1926 issue of the *Anthropologist* in the article on a statistical method for showing special relationships,¹ an error was made in one of the formulae. Thus, on page 596 the formula for Cell B reads $\frac{(A+B) \times (C+D)}{T}$ = the chance frequency. This

formula should read $\frac{(A+B) \times (B+D)}{T}$ = the chance frequency. This

error was simply a misprint and does not in any way affect the validity of the other figures as the correct formula was used in their computation.

FORREST E. CLEMENTS
UNIV. OF CALIF.
BERKELEY, CALIF.

¹ Clements, Schenck and Brown. A New Objective Method of Showing Special Relationships, *American Anthropologist*, Vol. 28, No. 4, 1926: 585-604.

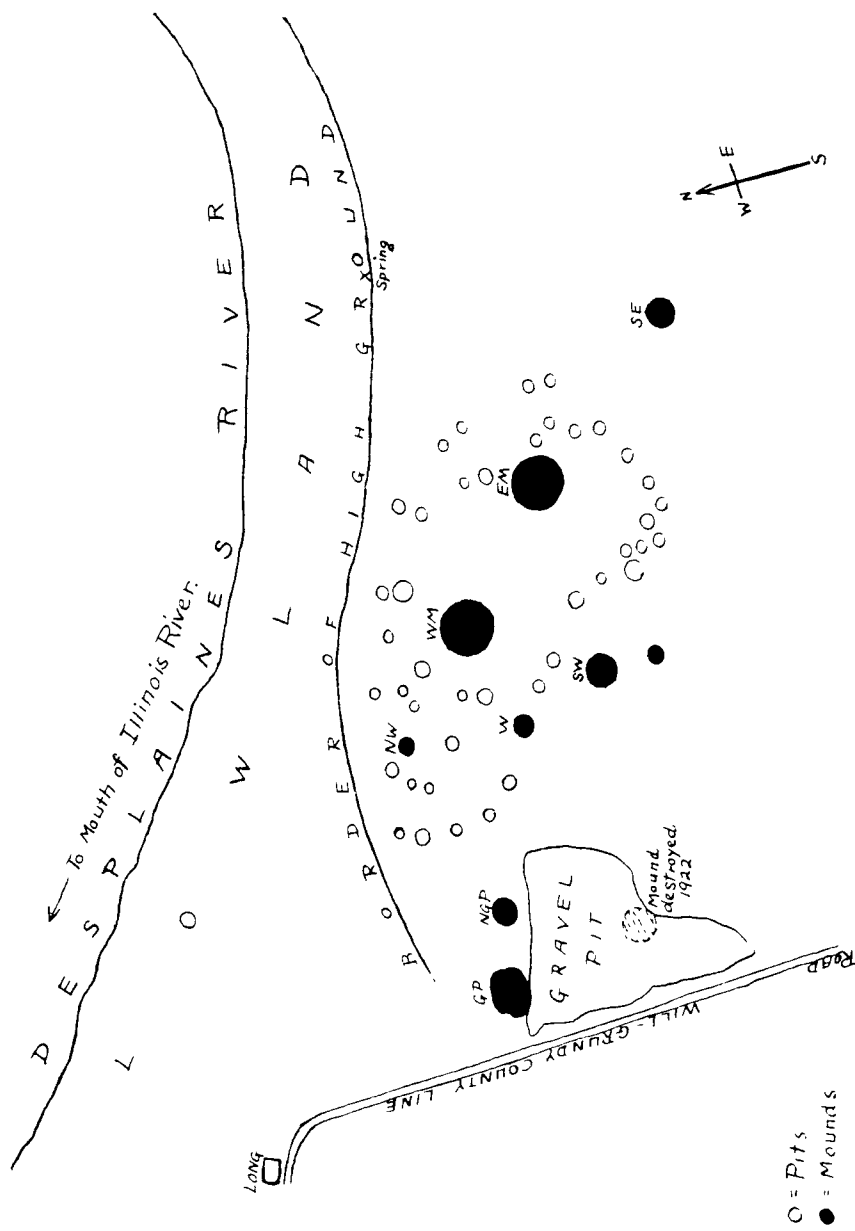


FIG. 1
The Fisher Mound Site, Will County, Illinois. Scale 1" = 150 feet.

American Anthropologist

NEW SERIES

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No. 3

THE FISHER MOUND GROUP, SUCCESSIVE ABORIGINAL OCCUPATIONS NEAR THE MOUTH OF THE ILLINOIS RIVER

By GEORGE LANGFORD

IN NORTHEASTERN Illinois, about 60 miles southwest of Chicago, where the Des Plaines and Kankakee Rivers converge to form the Illinois, is an old Indian village and mound site which after extensive excavation has yielded interesting disclosures. In this region evidence of aboriginal occupation is generally denoted by surface deposits of chipped flint, fragmentary pottery and occasional polished stone artifacts. More than one culture is doubtless represented but there is no way of determining this. The mounds to be described give opportunity for such determinations. Their outstanding features are:

Numerous superimposed graves arranged stratigraphically and culturally marking at least three occupations, with brachycephals above and dolichocephals below;

An intermediate pre-European culture prolific in small triangular chert arrowpoints, clay pots and artifacts of stone, bone, copper, and shell. Post-European objects are few and confined to the surface.

The locality, formerly part of the Cornelius estate in Will County on the Will-Grundy County line, is known as the Dan Fisher farm. It may be reached by automobile from Joliet on State Road No. 7, driving 11 miles to Channahon, then leaving the concrete and crossing the Des Plaines River over Smith's Bridge. From there the right-hand road follows the left bank of the river past Fisher's, the latter being about five miles beyond Channahon.

THE FISHER SITE

This site is a glacial limestone gravel deposit overlain by a veneer of dark surface soil, with sandstone and clay of the Lower Coal Measures beneath. The land is about 30 feet above the Des Plaines River and overlooks a lowland which extends from the

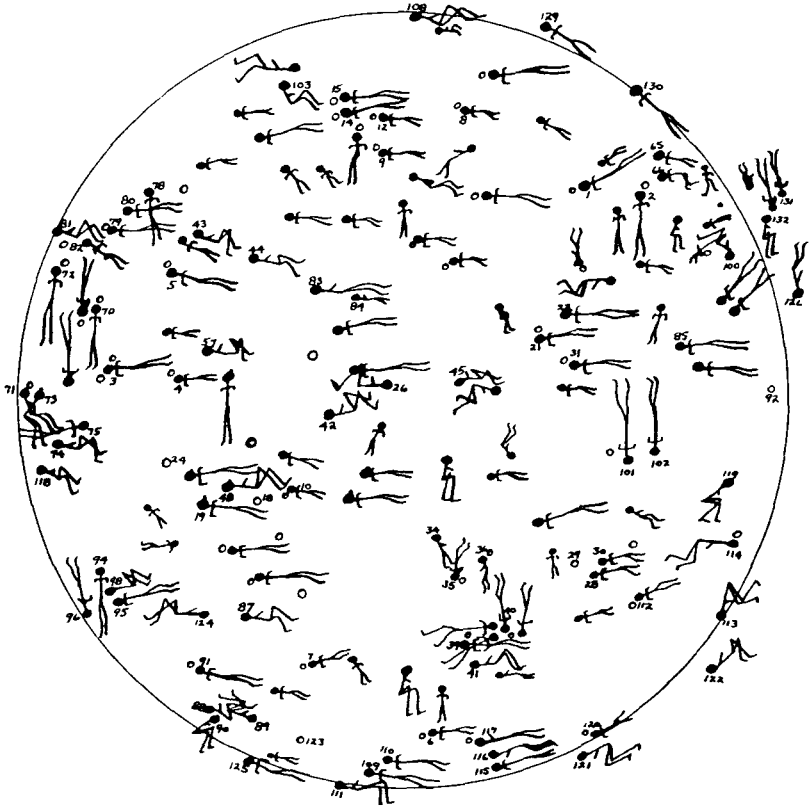


FIG. 2

Fisher's. Plan of the Big East Mound. Scale 5' 64" = 1'. Showing the human burials and clay pots, 0. Infants are the smaller manikins.

water inland 75 yards or more. 100 feet back from the low bluff's edge are two circular eminences: the "Big East Mound" 5 feet high and 50 feet in diameter, and the "Big West Mound" 6 by 60 feet. Near them are the smaller and almost unrecognizable "Small East," "West," "Southeast," and several other mounds

and around these are about 40 circular pits, from 15 to 30 feet in diameter, several feet deep and bordered by raised gravel ridges. Another group of mounds, or rather burial-heaps, originally three,

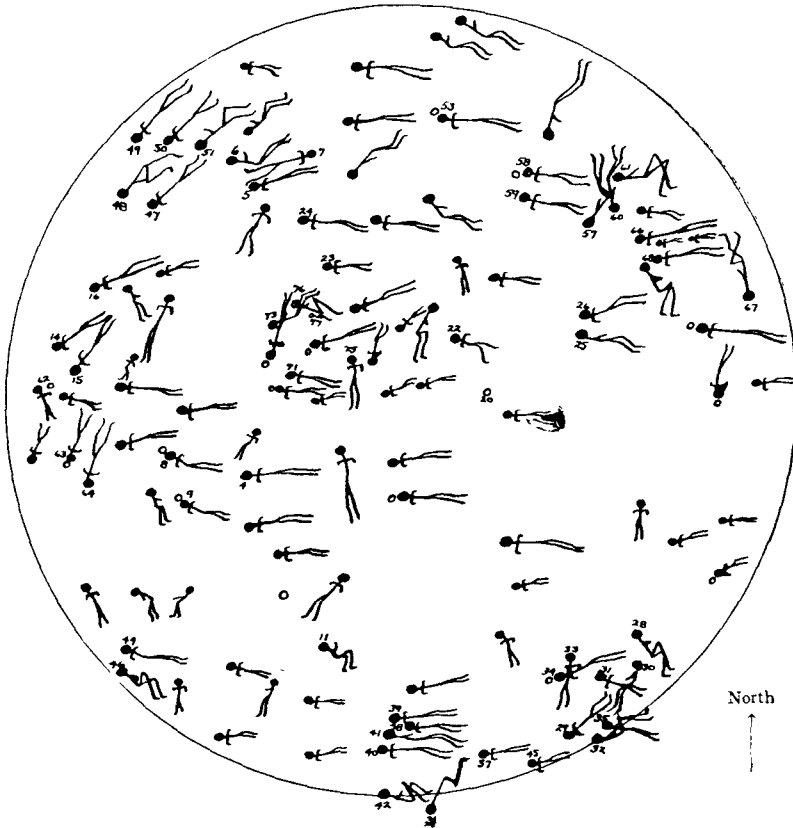


FIG. 3

Fisher's. Plan of the Big West Mound. Scale $5/64'' = 1'$. Showing human burials and clay pots, 0. Infants are the smaller manikins.

now two, lies about 100 yards west of the two big ones on the Will-Grundy County line near a shallow gravel-pit made by the excavation of material for road-building. See map, fig. 1.

THE SMALL EAST MOUND

In November, 1906, Mr. Howard Calmer and myself, both of Joliet, were attracted to this spot by numerous colored glass beads

which a rodent had brought to the surface while burrowing. We dug into the center of the mound and at a depth of two feet came upon an adult male skeleton lying prone with a rusty iron knife, silver crescent and pendant, small glass beads, bits of cloth, a carved bone, pieces of copper plate, and several painted wooden sticks. The man's skull measured 181 mm long and 143 mm wide, cephalic index 78.9. The limb bones indicated a stature of about 5 feet 8 inches. A snow storm interrupted our labors, and next spring others, continuing where we had left off, discovered two more male and two female skeletons, the males being accompanied by numerous silver pieces: reliquaries, crosses, round brooches, pendants, bracelets and arm bands, also a small mirror, patched iron pot, pierced clam-shell, bone pin, cloth fragments, large glass beads, pieces of copper plate and one large stemmed arrow-point of pinkish flint. Several of the silver brooches were embossed "G.C." and "Montreal," denoting George Cruikshank, a Montreal silversmith of post-Revolutionary War times. The burials may therefore be dated at about the close of the 18th century. The skeletons all lay upon their backs and the bones resting in black soil were poorly preserved.

In 1912, hoping that there might be more in this mound, I again dug into it and after passing through the litter of previous exploration, came upon two undisturbed adult female skeletons buried in a foot of gravel 18 inches below ground level. Near the head of one of them was a small shell-tempered clay pot with bark-like surface. These were brachycephals lying upon their backs with lower limbs slightly bent. The mound, approximately 25 feet in diameter and 3 feet high, consisted of two feet of dark soil with a thin seam of grey compact gravelly earth beneath, overlying 2 to 3 inches of dirt and ashes. This lower layer contained charcoal, fragmentary animal bones, and clam-shells. The lower burials could be traced up to the ash layer but not above it.

For convenience I will hereafter refer to dolichocephals as long-heads, mesocephals as mesos and brachycephals as round-heads. When the cephalic indices of the latter exceed 85, I call them broad-heads.

THE SOUTHWEST MOUND

Mound-digging is not a pastime calculated to hold one's interest long as a rule—so I had learned from previous experience. A day's work invariably ended with nothing to show for it but a ruined disposition and an exhausted body. The discovery of silver and other European artifacts in an Indian mound inspired no more than my temporary interest; but the hint of what might be below them was impressive. Accordingly I sank two holes about four feet square, in the Southwest Mound which was slightly larger than the first one—about 30 feet in diameter and 3 feet high. One of these excavations yielded superimposed burials,—round-heads above, mesos below; all women and children. Believing that the Fisher site was well worth exploring, I endeavored to interest scientists in the work for which I did not feel justified in devoting my time and expense. However, I was unsuccessful in arousing material interest and so for another ten years the site remained undisturbed.

WORK OF EXCAVATION

Until 1922 the mounds and pits had never been touched by the plow; but finally the ground-mound, pits and all, was ripped open and sown with wheat. In 1923 it was again cultivated for corn. This was too much for me. The two big mounds had so long been in my thoughts for the mysteries they might contain that after witnessing two plowings and foreseeing their ultimate destruction, I began work upon them in the fall of 1924, never dreaming, however, of the magnitude of the undertaking in which I became involved as I progressed. At first I had only intermittent assistance,—a temporarily interested helper one day, and another the next; but soon it simmered down to one man, Albert Tennik, Plate VIII, Plate IX, c. a Hungarian by birth, American by adoption, tall, powerful, and an indefatigable worker, who with continued experience became an expert. Actuated solely by interest akin to mine, he carried me on through a siege of painstaking and exhausting labor which I could not have long endured unaided. 80 days have already been spent upon the two big mounds alone and these are not quite finished. The other mounds and circular pits are only partially explored.

Our undertaking was not conducted in the manner I would have chosen, as we had but one day a week available and were not permitted to leave any open holes, each day's digging having to be filled in again. At first we feared that each visit might be our last, believing that Mr. Fisher, owner of the land, would not permit us to continue indefinitely; and so the need for haste prompted us to pass over many interesting details. Later, being secured from interruption, we used greater care and observed more closely, which we were glad to do because of the abundant material. I estimate that over 155 individuals were buried in the Big East Mound, 140 in the Big West Mound. Of these, I discovered 234 intact; 44 had been disturbed by previous excavations; and more remain. I have removed 70 clay pots; others were destroyed; and there are more left. In addition 90 human skeletons have come to light in the smaller mounds and around the pits. Numerous artifacts of bone, antler, shell, copper, flint and polished stone accompanied the human skeletons in the two big mounds. The diggings abounded in potsherds, clam-shells and broken animal bones. Graves filled the whole area of each big mound, one burial being superimposed upon another sometimes four high. What appeared at first a confused snarl, gradually untangled itself, when careful observation disclosed that the mass was really a composite of three or more levels, each defining a distinct human occupation.

STRATIGRAPHY OF THE TWO BIG MOUNDS

My first visit here was in 1898 and when in 1912 I made a close external examination, the mounds seemed in no wise changed. See plate IX, a and b. In 1906 the Big East Mound stood about 6 feet above ground level at the crest. The latter had been dug into at several points leaving a shallow crater. The original height seemed to have been over 7 feet. In 1924, cultivation had reduced this height to 5 feet. In the ground around it, the black surface soil 6 in. deep became mixed with gravel for another 6 in., then changed suddenly to limestone gravel, light buff in color and absolutely free of dirt, the interstices between the large stones being filled in with smaller ones and fine particles,

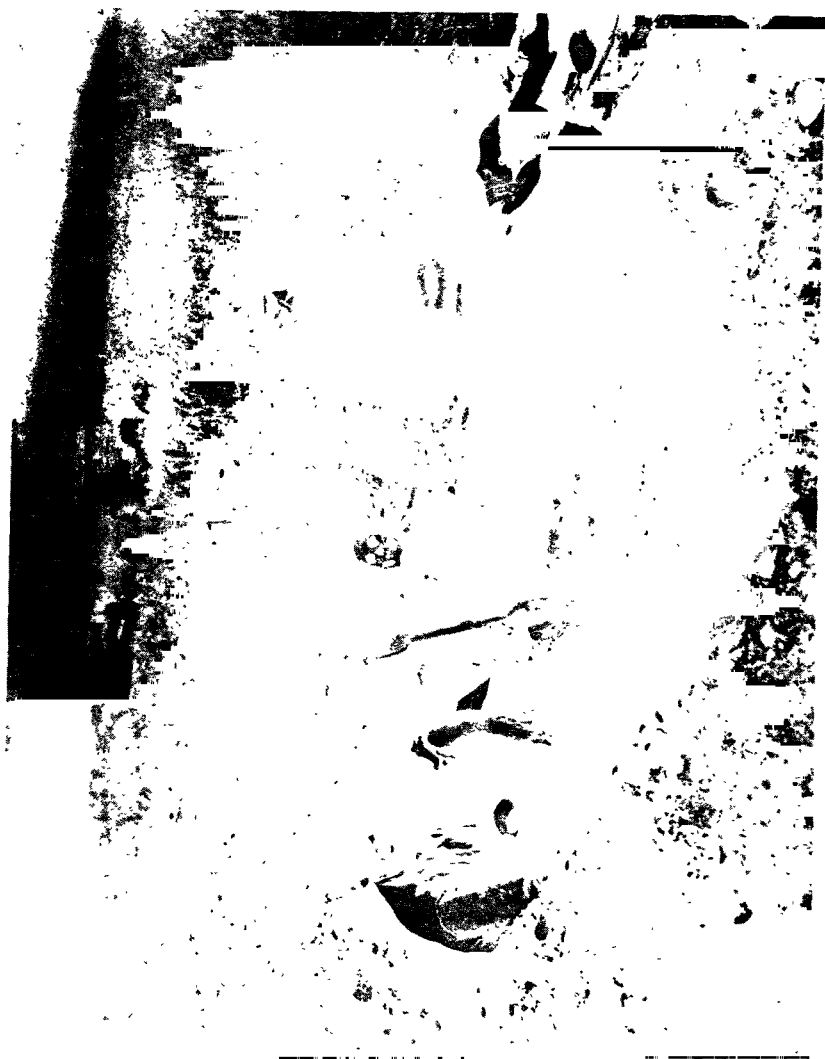


PLATE VIII

Work on Big East Mound. George Langford (right), Albert Tennik (left). Rim excavation.

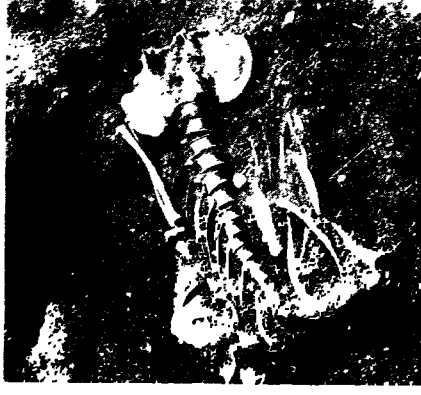


PLATE IX

a. The Big East Mound in 1912. Later I found the small EM 65 round-head under where I am standing. Beyond me, the Big West Mound and thorn-apple tree on it can be dimly seen. The mound height can be compared with my height. I am 6'4" tall. b. The Big West Mound in 1912. G. Langford stands on the center. A thorn-apple tree grew from the northwest portion. The camera points a trifle north of west. c. Excavation of the Big East Mound, July, 1926. Working around the rim. G. Langford in foreground, Albert Tennik at right. The camera is pointed north. d. WM 11. No modern excavations appeared to have disturbed this skeleton and yet only the trunk was present. At the left shoulder is a crushed pot containing a shell spoon.

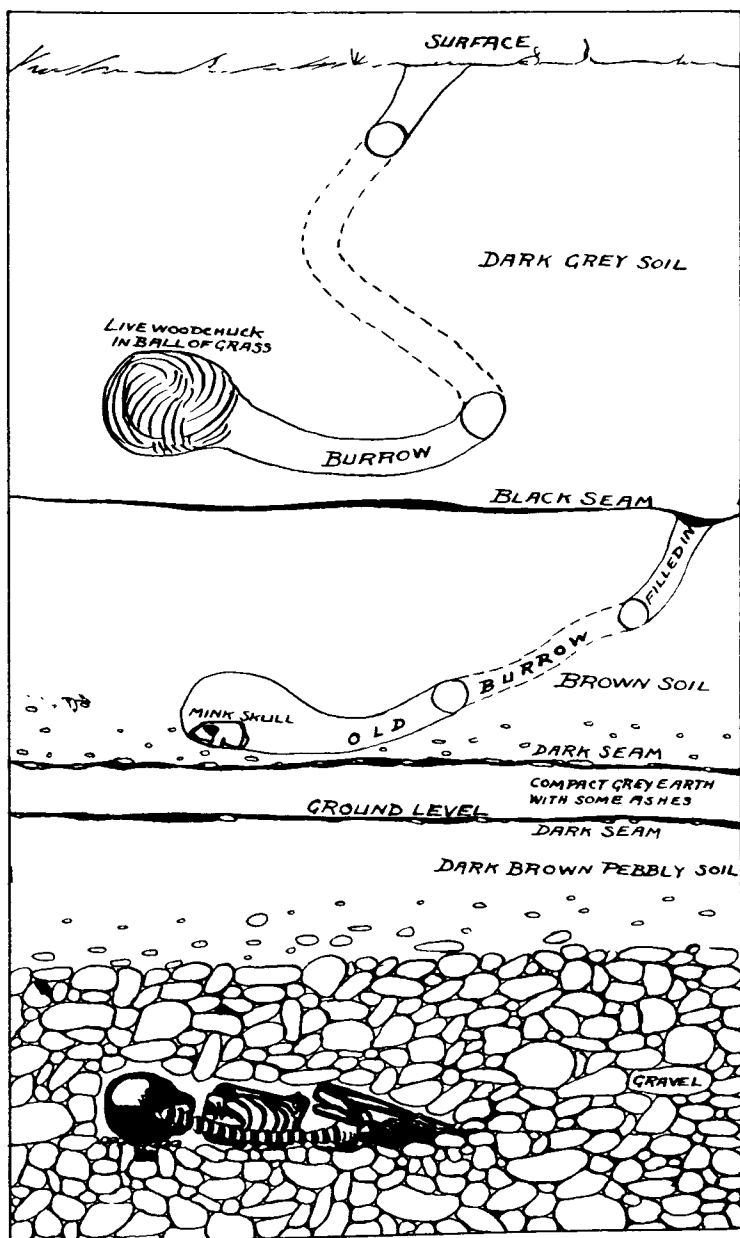


FIG. 4

Fisher's. Big West Mound. $5/8" = 1'$, 9 foot section looking north showing the female adult long-head WM 76 in gravel with infant WM 77 behind her. The head of WM 76 lies upon a pebble mosaic with small stone block in center. Two marine gastropod shell ornaments were touching the face.

almost coarse sand. This gravel is presumably late Glacial and derived from the Niagara limestone which outcrops along the Des Plaines Valley eastward as far as Chicago. Beneath the Mound the gravel deposit must be at least 20 feet thick. It overlies the clays and sandstones of the Lower Coal Measures, well-exposed about $\frac{3}{4}$ miles to the west along the banks of the Kankakee River. The mound's elevated position with gravel beneath, its sloping sides and compact structure, all went to make ideal drainage, a condition well-suited to preserve the contents. Of all the mounds I have dug into, this one far excelled in its facilities for the preservation of human bones and other semi-perishable substances in all seasons, dry or wet, warm or cold. Bones sealed in the gravel could have survived there indefinitely.

In 1924 the upper three feet of the mound was composed of rather loose dark surface soil. I arbitrarily term this the Upper Level. At its base was a dense black layer $\frac{1}{2}$ to 1 inch thick, which seems to be composed mainly of vegetable matter almost mineralized. I call this the Black Seam. In places it thins out into patches of gravel, or thickens, but is ever present and continuous, almost to the mound's periphery, where it is several feet lower than at the center. Beneath the Black Seam is $1\frac{1}{2}$ feet of brown pebbly soil, a hard, compact mixture of dark earth and gravel becoming coarser at the bottom. Below this is an Ash Layer 6 inches thick consisting in places of white ashes with bits of black charcoal above and coarse brown soil mixed with ashes below. Broken animal bones and clam-shells, both burned and unburned, are scattered through the mass, which instead of being continuous through the mound seems to be a collection of deposits one over each grave, the intervals consisting of very hard light grey earth mixed with pebbles. This layer, like the Black Seam above it, continues through the mound and is about 6 inches higher at the center than around the border. Its upper surface is topped with a thin seam of hard grey earth occasionally passing into patches of fine gravel. Its lower surface rests upon a thin layer of grey and brown dirt changing here and there to small gravel. This bottom layer is slightly above ground level at the mound's central

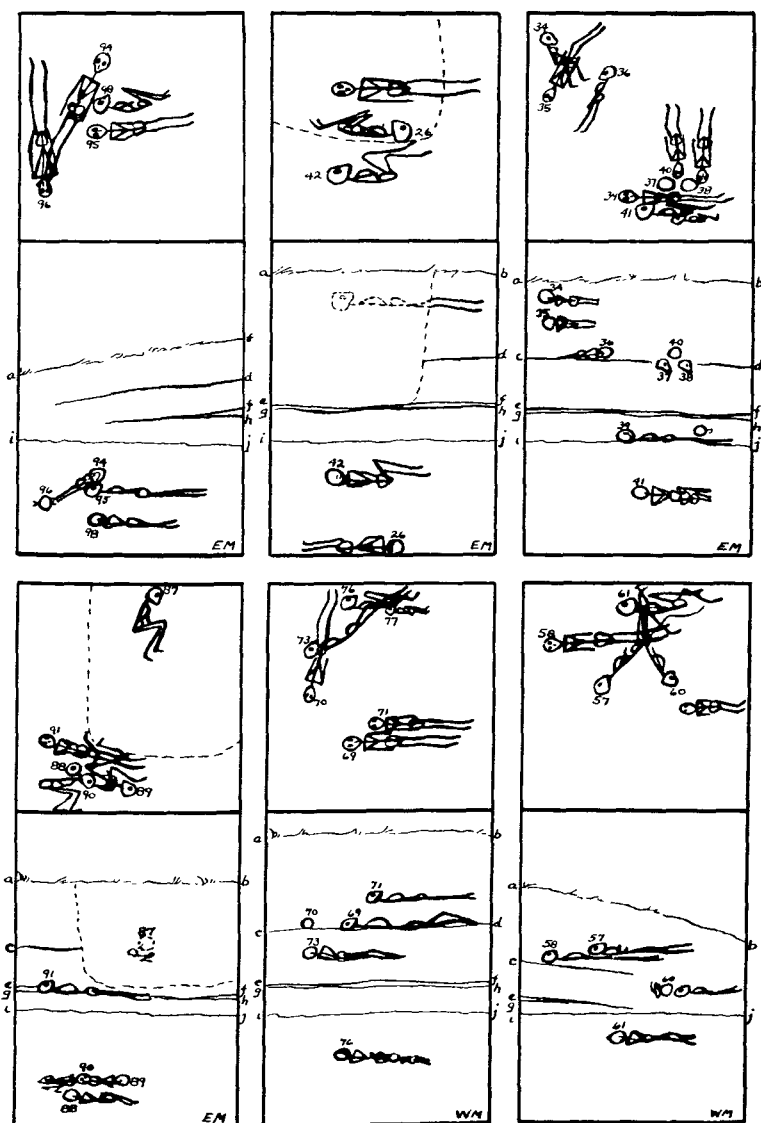


FIG. 5

Fisher's. Mound sections—all looking north—showing superimposed burials. Four are East Mound sections (EM); 2, West Mound (WM). Scale $1/4'' = 1'$. The dotted lines denote old excavations.

a-b, Mound surface; c-d, Black seam; e-f, Top seam of ash layer; g-h, Bottom seam of ash layer, ground level; i-j, top of limestone gravel.

The top of each oblong is a plan, the bottom a verticle section of it viewed from the south.

area and from 4 to 6 inches lower around the outer portion. It rests upon 9 inches of brown pebbly and sandy soil, the latter in turn lying upon the main gravel deposit. The two seams enclosing the Ash Layer I came to look upon as the most important landmarks in the mound and I used them assiduously to locate the origin of every grave beneath them. Without such marks it would have been impossible to distinguish one grave from another; but as used, each grave could be followed upward to its place of origin and located stratigraphically. Inversely, the two seams invariably proved to be the determining factors, the oldest burials having both seams over them intact, the next oldest showing complete penetration through the lower seam but not through the Ash Layer or seam above it. With continued practice these observations were easily made and are, I believe, to be depended upon. The Black Seam farther up proved a third important landmark and I used it in the same manner as those below. There is no question in my mind but that the three seams enumerated are the main factors in this mound for determining its meaning stratigraphically and for finding the true relationship of one burial to another. My main task was to locate them correctly and not be misled by streaks and other local soil irregularities, a task requiring careful observation. My continued interest in the work lay largely in this phase of it,—the search for landmarks to find the place of origin of each grave. What with the numerous burials, I spent few dull or idle moments. Our first efforts were spent in what seemed to me a vain effort to arrive at some system of determining the meaning of various constant features persisting amid the apparent confusion and, until we learned from experience, we passed over things apparently of no importance but which we were careful to observe later; therefore the data on some of our early finds are incomplete and uncertain. As most of the human skulls were found crushed or distorted, not much could be learned from them until they were mended—a time-consuming and laborious process. However, even without skeletal evidence, certain peculiarities soon showed themselves.

In the upper part of the mound half way down to the ground level we learned to expect no important finds of artifacts, and the

skeletons lay in various postures, some upon their backs, others upon their sides, the limbs being in all positions. The few clay pots were small and knobbed around their shoulders, with little attempt at ornamentation. Flint and chert arrowpoints were the same as found upon the surface throughout the county, not small, and usually notched or stemmed.

On nearing ground level, skeletons invariably lay upon their backs and uncrushed skulls proved to be all brachycephals. More relics appeared with the burials. Knobbed pots gave way to larger and finer ones with considerable ornamentation of a certain kind that I call "antler-point," inasmuch as the designs appeared to have been engraved with antler-tips, of which I found many. With these were pots with rough bark-like surface, bearing little other decoration. Large notched and stemmed arrowpoints were replaced by small triangular ones, very thin and sharp and usually made of chert. Slightly above ground level, ash-beds were common, although in places we encountered grey dirt, so hard and compact as to resist any effort with the shovel and requiring the use of a pick. In some places ash-bed and hard earth blended in a continuous layer.

Beneath the ash-bed and below ground level were many graves clearly exposed by grey and brown pebbly dirt which contrasted strongly with the light buff limestone gravel deposit. These graves were easily found. The skeletons in them were all brachycephals, mostly females lying upon their backs and the uncrushed specimens showed unusually broad skulls. "Antler-point" pots were common, becoming larger and finer. Small triangular chert arrowpoints still prevailed, accompanied by a rude bone and shell culture.

Having learned that the finest pots, most abundant artifacts, and best-preserved skeletons were to be found near or below ground level, our attention centered there, for graves were very numerous. Sometimes we stumbled upon burials filled in with gravel instead of contrasting colored earth and no pots or artifacts could be found in such graves, nor were any of the skeletons lying flat on their backs. They were on their sides or half way on their backs or faces, and the few crania mended showed them to be

other than brachycephals; furthermore large males predominated. Some of these graves could be detected from above if examined very closely, the gravel texture and color above them being slightly different from the surrounding deposit. Other graves betrayed no sign of their presence after the closest examination and I simply dug deeper and found them occasionally, much to my surprise. I could recognize only mesos in the semi-concealed graves and long-heads in the concealed ones. These facts persisting may assist in explaining the importance I attach to the Ash Layer, particularly its enclosing seams above and below.

Each of the two Big Mounds had been casually excavated in several places prior to 1906, the holes being from four to five feet square but in no instance had they gone deep enough to reach the oldest burials in gravel. The Upper Level had served for a long time as an animal winter resort, the ground around the mounds being too poor in soil for the purpose. In December 1924 I encountered a woodchuck, garter snake and 6 lizards, all alive at a three-foot depth in the Big East Mound. I also found a sleeping woodchuck in the Big West Mound and traces of numerous old burrows in both. Many of the higher burials had been damaged by these inroads, plate IX, d, none of which however had penetrated the Ash Layer. Some of these old burrows contained bones of moles, rabbits, mice, and woodchucks which were often not readily distinguished from the numerous animal remains originally piled in with the dirt. These disturbances often made determinations difficult in the Upper Level, particularly in the Big West Mound. The latter, although much like its neighbor, contained a much larger amount of dark soil, which descended more than a foot below the Black Seam. The latter was 6 inches higher up, and the dirt between it and the Ash Layer was greyer than in the Big East Mound and with fewer pebbles. The Ash Layer, the two seams enclosing it, and all below were, however, much the same. The human burials in it differed slightly from the Big East Mound, however, in that only one broad-head appeared in the Middle Level, this deficiency being made up by numerous graves whose position is doubtful but which probably belong, some to the Lower and others to the Middle Level.

THE UPPER LEVEL

After my 1906 experience with the small Southeast Mound, I expected to find post-European objects in the two big ones; but all that I did find was an infant burial with glass beads and a round silver buckle in each, plate X, a. These were near the center of each mound and close to the surface, representing all of the post-European artifacts observed. There were also some copper fringe-holders made of plate bent into small cones.

The upper three feet of both mounds had contained human burials, but plowing, previous excavations, and burrowing rodents had minced up the skeletons. Among the few badly broken skulls and bones recovered I found no individuals of unusual size although they were as a rule larger than others buried deeper. Conditions were more or less unsettled down to the Black Seam of the Big East Mound and in places from one to two feet below it in the Big West Mound, whose upper four feet contained more burials than the former. Consequently the place of origin of each grave was most difficult to trace, and when it could be traced frequently the skull was poorly preserved. However, I secured not a few fine skulls and bones assignable either to the Upper Level or to the top of the Middle Level. They are round-heads and mesos which appear to differ from the deeper skeletons, plate XI, d. In only one case, and that with some doubt referred to the Upper Level, were the human skeletons accompanied by artifacts, the latter consisting of five crude arrowpoints or rejects placed close to the head. These pieces were unstemmed and made of chert. Notched and stemmed arrowpoints occurred in the Upper Level of both mounds but none were directly associated with the skeletons.

THE MIDDLE LEVEL

This section of both mounds abounded in human burials and relics,—clay pots and artifacts of stone, bone, copper and shell. Certain types of pots found above the Ash Layer did not occur below it. Above the latter was the great bulk of loose refuse, potsherds, chert flakes, clam-shells and splintered animal bones. In the lower portion, undisturbed except in a few instances, certain

characteristics persisted, in contrast to the confusion reigning above. Twelve skulls, the first ones mended, which I traced up to the top seam of the Ash Layer in the Big East Mound, are brachycephals. Six of these extended upon their backs and accompanied by pots, are broad-heads with cephalic indices ranging from 85 to 91. Of the other six, none had pots, the cephalic indices ranging from 80 to less than 85. All were in gravel lying irregularly without relics of any sort. The six with pots had artifacts of stone, chert, copper, bone, and shell. All the residents beneath the Ash Layer were comparatively small individuals. They lay on or in the underlying gravel deposit. The height-length, nasal, facial, orbital, and gnathic indices show the skulls to be rather high, noses medium to narrow, faces both broad and long, eyes medium to low and features somewhat prognathic. A characteristic of the Middle Level was the presence of small triangular arrowpoints, unstemmed and made of chert. Caches of 3, 6 and 8 were near the heads of skeletons, one long slender "drill-point" accompanying each lot. Not a single notched or stemmed arrowpoint appeared in this level although I found 18 above the Black Seam.

THE LOWER LEVEL

The skeletons in this section were all buried in gravel, and as gravel with almost no dirt was used to fill in some of the graves, they were very difficult to detect. Others had not the slightest sign of dirt and their discovery was purely accidental. Of the first noted, the great majority lay upon their sides in semi-crouching positions, facing north, heads west, feet east, buried from 2 to 3 feet below ground level. All were mesos with high heads, narrow to medium noses, faces massive, eyes generally medium and features decidedly non-prognathic. Unlike the brachycephals, their lower jaws were powerfully developed posteriorly. Among them were the largest individuals in the mounds. Of the concealed burials 6 came from the Big East and 2 from the Big West Mound, buried 3 to 4 feet below ground level. All had long high skulls, narrow to medium noses, medium faces, low orbits and decidedly non-prognathic features. Two were

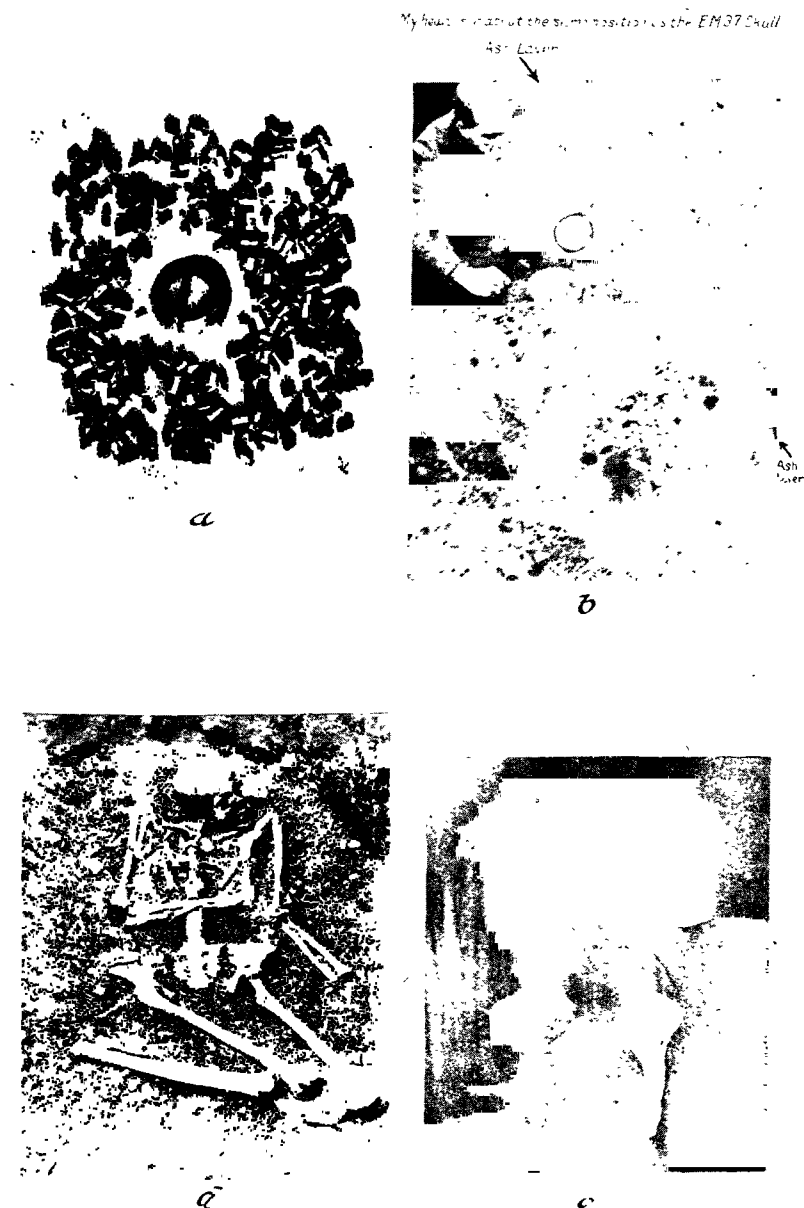


PLATE X

a. EM 34. Silver brooch and glass and Kaolin beads with child EM 34. Plowing had exposed these on the surface. No other Post-European objects appeared in the mound. b. Upper half, EM 39 with large pot and small pot. I have removed EM 39 skeleton. Camera pointing north and down. Lower half, EM 41 in gravel after removal of EM 39. Camera swung down to 60°. c. WM 73 with female long-head WM 76. The two marine gastropod shells were touching the face. The stone block, a pink stone with green veneer (gneiss?) is unfabricated but formed the center of a mosaic of 1" limestone pebbles on which the skull rested upon its left side. 3/8. d. EM 125. Young female adult round-head. In the crook of the left elbow were the remains of a tiny infant some of whose bones are shown



PLATE XI

a. The top skull is EM 21, a child with shell pendant, clay pot and tiny copper plate beads. Zone II of Middle Level. Prone burial with face to the east. Note the obtuse jaw angle and prognathic features. The lower cranium is SW 1, the only true long-head found outside of the two big mounds. 3/16. b. Human bones. Left to right: WM 15—broken ulna at center of shaft, WM 30—radius broken and healed at wrist. The center radius and ulna show curvature common to some of the skeletons. To the right of them is a broken and healed ulna, then a radius widened out at the shaft. The outer right hand figure is the humerus of WM 75 diseased at head and much curved. 1/8+. c. WM 66. Prone adult female round-head in Zone II of Middle Level. An infant was close to the right forearm and another near neck of right femur. The bones are visible. No relics with the skeleton. The camera is pointing northwest and down about 45°. d. EM 39. Narrow faced round-head female with stub handled pot. This burial directly overlay the deep long-head EM 41. Note the decomposed basal part of skull and the inclined lower jaw with obtuse angle. 3/16+. e. This cache of chert "rejects" was under the head of a male adult round-head, WM 67, at the base of Upper or top of Middle Level. 1/4.

females accompanied by infants, the other 6 being males. They lay facing north in crouching positions without pots or relics, barring two with a few ornaments made from marine gastropod shells. A third had four flints of doubtful human workmanship.

SUPERIMPOSED BURIALS

Many graves were directly over others, frequently in tiers of two or three, sometimes four. For purposes of identity I will specify the various burials as I have marked the specimens; for example, WM 76 denoting skeleton and relics No. 76 from the Big West Mound; EM 26, burial No. 26 in the Big East Mound, etc. All measurements unless otherwise specified, are in millimeters. To avoid endless repetition of the words "above ground level" and "below ground level," I will refer to the former with a plus and to the latter with a minus sign. Measurements are given to the bottom of the graves whereon the skeletons lay.

One of my early excavations was a long trench east to west through the center of the Big East Mound. Prior to 1898 an excavation had been made there by someone, and I encountered parts of several skeletons at +42", the foot-bones of one having been left undisturbed in the bank. The old excavation continued down to the Ash Layer but not through it, the hard tough layer evidently having proved too much for the diggers. Passing through this into gravel at -12", I noticed a slight discoloration at one point and dug there, finding EM 42 a male adult at -30". The skull like all others lying deep upon the left side, was crushed laterally and twisted diagonally to the face, requiring considerable mending and some restoration. The bone texture of these gravel burials is hard and finely preserved, the color ranging from cream to very light brown. EM 42 being a good male specimen and my first meso in a semi-concealed grave below ground level, I have made it a type, representative of the group. There seemed to be small chance of finding another under it as I dug deeper, for there was no sign of dirt, nevertheless at -50" under the foot of EM 42 there appeared a skull EM 26; and as it was a crouching long-head, I have made it a type of the deep long-head group. I secured the head and one clavicle and then undercut where the balance

of the skeleton lay fast in the bank. Our enforced method of excavating and then filling in each day's work made operations hazardous at considerable depths, as shown on this occasion. The wall of dirt over 11 feet high, counting the earth around the rim, contained part of the old excavation on one side and could not support itself. Slowly it toppled inward and I was fortunate enough to see and jump clear just in time. This was but the first of other similar experiences in some of which I did not escape so easily. Fortunately I had a dependable assistant to dig me out, illustrating how advisable it is to refrain from excavating Indian mounds alone. Close to the head of EM 26 were four rough flints that I should ordinarily not consider as made and used by human hands. However, they are "worked," and as the gravel has yielded no flint elsewhere, the four pieces at least deserve mention.

In the Big West Mound, a Round-head WM 70 with pot at +24" lay diagonally over an adult WM 73 at +12", the latter wearing a copper plate disc over each ear. WM 73 in turn was partially above WM 76 a female Long-head at -30". The Ash Layer and its two enclosing seams were intact over the last-named skeleton. Its head, left side down, rested upon a mosaic of limestone pebbles, apparently chosen to a 1 inch size. In the center was embedded a small stone block veneered with some green stone, plate X, c. No doubt the block was chosen for its symmetry and oddity. It bore no marks of fabrication. Another interesting feature of this burial was the presence of two long-canaled, low-spined marine gastropods resembling *Fulgur* or *Tudicula*, resting upon the face of WM 76. They were notched around their slender bases and no doubt were used as ornaments. This burial was accidentally exposed from the side, giving an excellent view of the skeleton in its gravel vault, the Ash Layer and its enclosing seams intact above and the Black Seam still higher, the wall section being nearly 9 feet high. In the upper four feet were traces of old filled-in burrows. One burrow still open had a live young woodchuck curled up in a grass nest at the bottom. It was in the month of November and the animal was so thoroughly asleep that after being removed, he was over an hour awaking and limbering up sufficiently to crawl away. There was the clear trace of another

burrow the like of which I have not observed in either of the two big mounds. It extended diagonally from the Black Seam to the Ash Layer and appeared to have originated at the former as it ended abruptly there, running down to the Ash Layer as a tube of grey sandy earth in brown pebbly soil. Within it was a complete skull and some bones of a mink. An infant skeleton lay close to WM 76 in the same grave. The interstices between stones enclosing the skeletons were tightly packed with finer pebbles and sand in a tenacious mass, and the bones were perfectly preserved, much more so than the skeletons WM 73 and WM 70 above. The WM 76 and EM 26 burials described were near the centers of their respective mounds.

Farther out, even near the rims, I found skeletons superimposed. One excavation half way between center and rim on the south side measured when finished 6 feet wide, 11 feet long, and 9 feet deep. Near the north end at the surface was the child with glass and kaolin beads previously mentioned. It overlay a second fragmentary infant skeleton, which in turn was superimposed upon a third immature skeleton at +24" in the Black Seam, with a small loop-handled pot containing a clam-shell spoon. A fourth child's skeleton lay near the third. Under the feet of the latter at +15" and above the Ash Layer were two lone adult skulls without lower jaws, both brachycephals—one a male, EM 37; the other a female, EM 38. EM 37 had a small triangular chert arrowpoint lodged in the left temple. This skull directly overlay an infant skeleton, EM 40 at -12" beneath a 5" bed of ash dirt, with a small clay pot near the head. Beside EM 40 was a narrow-faced female round-head EM 39, plate X, b, a prone burial with face looking to the east. A peculiar stub-handled clay pot containing a clam-shell spoon lay near the skull. I removed the skeleton, all of whose bones were in place and continued down into apparently undisturbed limestone gravel. It seemed a waste of effort to go deeper but I did; and at -36" directly below EM 39, came upon a long-head EM 41, a crouching burial lying east and west accompanied by an infant's skeleton. Such unexpected finds as EM 26 and EM 41 led me to dig deeply in succeeding excavations and with considerable success.

In another excavation near the rim on the west side of the mound an adult meso EM 78 at +18" was superimposed upon a child EM 79 with grit-tempered pot buried at +6". The latter overlay an adolescent broad-head EM 80 at -12" with small triangular chert arrowpoint under the head. At -36" was an adult broad-head with a fine pot disturbing an adult long-head EM 81, the latter more than 42" below ground level. Directly south of this excavation and near the rim, an adult and adolescent, EM 95 and EM 94 both round-heads, were side by side -30" deep. An adult round-head EM 96 was near by 6 inches deeper, almost directly overlying EM 98 an adult long-head in a concealed grave at -48".

In the Big West Mound, an excavation on the south side near the rim yielded an adult WM 41 at +18" directly over a second EM 38 +6" which in turn directly overlay a third WM 39 on ground level. WM 38 is a round-head adult male, the bones showing powerful musculature. Under WM 39 at -30" was a round-head WM 40 half upon its side, the grave being filled in with grey dirt. Of 8 skeletons found in this hole, one WM 42 at -24" was a long-head in a concealed grave with no burials directly above it.

These were cases of graves directly overlying each other. Frequently although direct overlying did not occur, a chronological succession was apparent. On the northwest border of the Big East Mound, an adolescent EM 76 lay prone in grey dirt near the surface nearly 3 feet above ground level. The hole measured 10×7 feet. EM 76 was at the center, head south, feet north. A mantle of stones covered head and shoulders. At +24" close to the east wall, +15" near the west and extending unbroken through the excavation was an irregular sheet of compact black earth with occasional patches of pebbles. Beneath this near the east wall were two prone brachycephals, EM 69 and EM 70, at +12", both with clay pots near the heads. They lay in hard brown soil coarsened with fine gravel. In the northwest corner was an ash-bed 5" thick, its surface at -6", continuing unbroken through the rest of the hole as a grey dirt and gravel layer so compact as to resemble soft concrete. Beneath the ash-bed and on gravel at -18" was a prime female adult broad-head EM 72 with a fine, large "antler-

point" pot. In the southwest corner at -18" was a child EM 70 with a fine, small "antler-point" pot. A slight discoloration in the southeast corner led me to dig there and discover two adults EM 74 and EM 75 in sprawling attitudes without pots or artifacts. The two skulls were much crushed and difficult to measure correctly, but EM 74 appears to be a meso, and EM 75 a round-head.

Occasionally one burial disturbed its predecessor. EM 117, an adult at ground level, had considerably disarranged a round-head EM 116, 3 feet beneath, and a second, EM 115, slightly. These last two lay upon their sides close to and facing each other, their heads pillowed upon clustered artifacts of stone, chert, bone and antler, the largest collection found in any grave of either mound.

MORTUARY CUSTOMS

In the Upper level, disturbed conditions made it impossible to determine notable characteristics. Artifacts were few and the skeletons lay in various positions mostly irregular. In the Lower Level, all mesos lay in irregular postures, although always upon their sides, the long-heads also upon their sides but studiously arranged with knees drawn far up and arms bent with hands beneath the chin. Mesos and long-heads both had their backs to the south, heads west. The arrangement of pebbles beneath the head of WM 76 has been described. Its appearance was striking, as I was fortunate enough to get a glimpse of it before any of the stones were disturbed. It was a mosaic of 1" limestone pebbles with an odd stone block in the center, all made level for about 9 inches in diameter. The left side of the skull lay on the center of this mosaic. EM 98 previously discovered had, I believe, a similar arrangement but the skull was difficult to see and reach and I did not suspect that the pebbles all of one size had been placed there for a purpose. The broad-heads lying beneath the Ash Layer of the Middle Level lay flat upon their backs with arms flexed and legs straight or bent sideways. The majority had their heads west, feet east. Each grave was dug no more than large enough to contain the body, and filled in with grey pebbly earth up to the base of the Ash Layer. Every broad-head had a pot or artifacts, and so did some of the round-heads though many of these were without

relics of any kind. Clay pots were placed above or beside the heads, the latter occasionally resting upon small caches of artifacts. No skeleton in either mound had artifacts any lower down than the breast-bone. Pots accompanied female adults and children, the latter generally having small pots and adults medium to large. In eleven cases bones of one hand were within the pots, all being burials of children.

With few exceptions, pots contained clam-shell spoons encrusted with a tenacious and gritty brown film. Bits of bones were in many of the pots which seem to have contained broth or stew. Undisturbed burials had all of the bones in place. None had come in contact with fire or suffered mutilation. No foreign earth appeared. Occasional blotches or red pigment appeared upon the skulls, staining the gravel beneath them. Several stone celts in contact with yellow pigment are etched as though with acid.

Between the Ash Layer and Black Seam, some of the adult skeletons had dense, shiny patches over their heads, apparently black earth mixed with decomposed animal matter. While some of the bones in the Ash Layer were burned, others were not, nor did the adjacent seams or even the hard dirt patches in the Ash Layer itself show trace of burning. There were no signs of altars, except possibly in one instance where a hole had been dug in gravel about three feet round and one foot deep and filled in with ashes. In the latter were a human radius and ulna unburned. The gravel around this cavity was reddened by fire. This was at the western rim of the Big West Mound. I could not find a single burial originating beneath the Black Seam that was not in a hole dug for the purpose. Above that were some skeletons that appeared to have been simply laid down and covered over with stones and dirt, although I am not certain of this. I am certain, however, that there were no bundled burials or cremations.

BURIALS OF THE MIDDLE LEVEL

Male adults were scarce, and the first one found I have taken as a type. This individual EM 19 lay in gravel at -18", head west, feet east. The head of the right humerus was much eaten away by injury or disease, and that bone was shorter than the left. On the right side beneath the chin were 14 much decomposed antler points,

probably the remains of a necklace, for they were too curved to have been used as projectiles. Near the right ear was a leaf-shaped chert blade; close to the right shoulder, 6 small triangular chert points and one long slender point. About 6 inches farther down was a polished stone "celt." The 8 chert pieces were placed points upward. After light brushing they and the celt showed long dark discolorations in the gravel, which I interpreted as the remains of wooden shafts to which the pieces were lashed. I merely infer this, for not a particle of wood remained. The lengths of the arrow shafts were about 21", the celt 15" and less than 1" diameter. The leaf-shaped blade showed a half-inch or more diameter, but I could not trace it under the skeleton. Apparently the stone relics represented 7 arrows, a lance and a tomahawk. The skull of EM 19 has a cephalic index of 86.7. The forehead sloped rather strongly, the back of the head is flattened and the sides bulge outward. In no other burial were there any signs of wood in connection with artifacts.

EM 2, a young female adult, another broad-head in gravel, had an otter skull and jaws resting upon the forehead. The rear part of the otter skull was cut or broken off. Below the chin was a large shell bead; at the ears two thin copper discs which had stained each temporal bone green. This was a prone burial—head north, feet south. Near the top of the head was a pot made of clay mixed with pulverized shell. This pot was beside the head of the skeleton. It is $7\frac{3}{4}$ " diameter and $6\frac{1}{4}$ " high, globular, low-rimmed and with constricted neck. The decoration is of a kind that I define as "antler-point."

EM 21, a prone adolescent round-head with projecting face, had a small grit-tempered pot near the left shoulder, a pierced clam-shell pendant upon the breast-bone and some tiny copper plate beads below that. In the double burial EM 115-116 with 117 encroaching, bone and stone artifacts were pillowed under the skulls, and among the implements were bones of animals bearing no marks of fabrication. Many skeletons were unaccompanied by relics of any sort.

In previously disturbed areas with no ash layers above them were several mesos and long-heads. These were crouching burials

above gravel. In direct contact with each, the earth was absolutely free from pebbles, blue black and shiny as though containing clay. The skulls were badly distorted. Three in the body of the mound, EM 83, 101, and 102 seem to be mesos, although measurements are uncertain because of the warped condition of the skulls. EM 83, a young female adult with new-born infant, had a small triangular chert arrowpoint under the left clavicle and a bored round bone point between the left radius and ulna. Close to the head was a crude celt-like stone tablet with 10 bone cylinders adhering to it, cemented there by a tenacious gritty substance. EM 101, a female adult with knobbed grit-tempered pot, appears not to have been quite dead when buried. One arm had crushed the pot, and the hands extending downward were clenched around hard lumps of pebbly earth. The heel-bones had moved forward making grooves in the coarse soil which showed two small piles when I swept the skeleton clean. EM 100, a young female adult, lay in a crouching position, with an infant beside her. This is a long-faced, narrow-nosed long-head. The soil above was disturbed by a previous excavation, and the grave could not be traced upward.

EM 125, plate X, c, a young female adult round-head prone in gravel at $-18''$ at the southern rim of the Big East Mound, had an infant at her left elbow. WM 66, a like case in the Big West Mound, had two infants, plate XI, c. WM 49, a male adult round-head at $-12''$, was accompanied by 3 small triangular chert arrowpoints and a small but interesting collection of bone artifacts, all beneath the head.

WM 45, a half-grown round-head child, was in a funnel-shaped cavity extending down to two feet below ground level and filled in with black dirt free of pebbles or sand. The skeleton lay in this dirt at $-12''$. The head had become detached and was $18''$ higher up encased in a complete deer antler, whose four points had been cut off and the stumps split away for several inches down, making a tool of some sort which showed considerable use.

ARTIFACTS FROM THE TWO BIG MOUNDS

Although prolific in pots, the collection does not contain a particularly large number of ornaments and implements although

there are enough and sufficiently varied to make comparisons with similar relics from other localities. Articles used for adornment appear very crude in contrast to those employed for obtaining and preparing food. Art in any form appears solely upon the pots. The latter make a fine collection which will be difficult to duplicate in this region, where whole specimens are practically unknown.

Before discussing the various relics in detail, negative evidence may be considered, for many things that I expected to find, and searched for diligently, were conspicuously absent. There was no sign of grain nor any tools which suggested cultivation of the soil. No seeds or fruit-pits appeared, nor were there any traces of perishable material, such as cloth, hide, hair, woven reeds or wood with a few exceptions. Apparently the people, of the Lower and Middle Levels at least, subsisted upon fish, flesh and fowl. Of cloth, the only suggestion is a small piece about 1 inch square which appears to be coarse matting. It adhered to one of two copper ear discs on the face of WM 73. These discs heavily encrusted with green oxide, had also preserved two round flat and pierced buttons made of leather or wood, discs, and buttons evidently having been fastened together and used as ornaments. In two other instances the buttons had been preserved by contact with the copper discs. Of three copper bead necklaces, the string holding them together was recognizable although reduced to powder. Of wood, I found several small chunks in the Upper Level. These were too soft to handle. Small crumbly pieces of bark lay embedded in the Ash Layer. Near the skull of EM 26, its top below ground level, was a stub 5 inches in diameter and 30 inches long standing on end. This stub was not soft, rather hard and brittle like a walnut shell. Marks of hardened grease appear in some of the clay pots, and the shell spoons are frequently encrusted with a hard, gritty brown film. Some of the bone artifacts have particles of gritty film adhering to them, tenacious enough in several instances to fasten various articles to each other. The dog is the only animal observed that can be considered domesticated. It occurs in the Upper Level but not with certainty below, and I find no sign of it beneath the Ash Layer. The bison is absent. Of chipped stone implements, no notched or stemmed piece occurs

below the Black Seam. The polished stone implements are celts only. Grooved axes and clubs, pierced tablets, effigies and other polished pieces which are occasionally picked up in neighboring localities, remain as yet undiscovered upon the Fisher site. Pipes, too, are absent, at least I have found none, either of stone or clay, in any of the mounds. The objects to be enumerated are clay pots, and artifacts of copper, shell, stone and bone. All measurements are in millimeters.

CLAY POTS

Of the pots secured from the two big mounds, only about 6 can be assigned to the Upper Level and as these lay in previously excavated areas, their true position may possibly be at the top of the Middle Level. The remainder were from the Middle Level, some of them so long crushed that fragments had disintegrated. A few were undamaged, others broken but readily mended and restored. In form they are globular with sharply constructed necks and low rims, the latter occasionally almost vertical but generally flaring outward. In size they average 190 mm. in transverse diameter and 140 mm. high, the breadth exceeding the height. Many are shell-tempered; in others the clay was mixed with crushed crystalline rock or chert. The few pots from above are small, the largest one measuring 127 mm. in diameter and 82 mm. high, being with skeleton EM 101 beneath the Black Seam, plate XII, a. The outer surface is smooth except for knobs around the shoulder made by pressing the moist clay from the inside with the finger. There are six of these knobbed pots, plate XII, b. Between the Black Seam and Ash Layer the number of specimens increase and they are finer than those above, the technique improving downward into gravel where the larger and finer pots were found. Most of these are shell-tempered, others rock-tempered. This pottery is as a rule fragile, from 3 to 5 mm thick at the bottom and 1.5 to 3 mm at the shoulder. Most of it is sun-dried or only slightly burned, although a few pieces are hard and brick-like. Outwardly the color is grey or light-brown. The inside surface is frequently pink, possibly occasioned by food within that contains grease, plate XII, c. Small pieces of bone were in many of the pots.

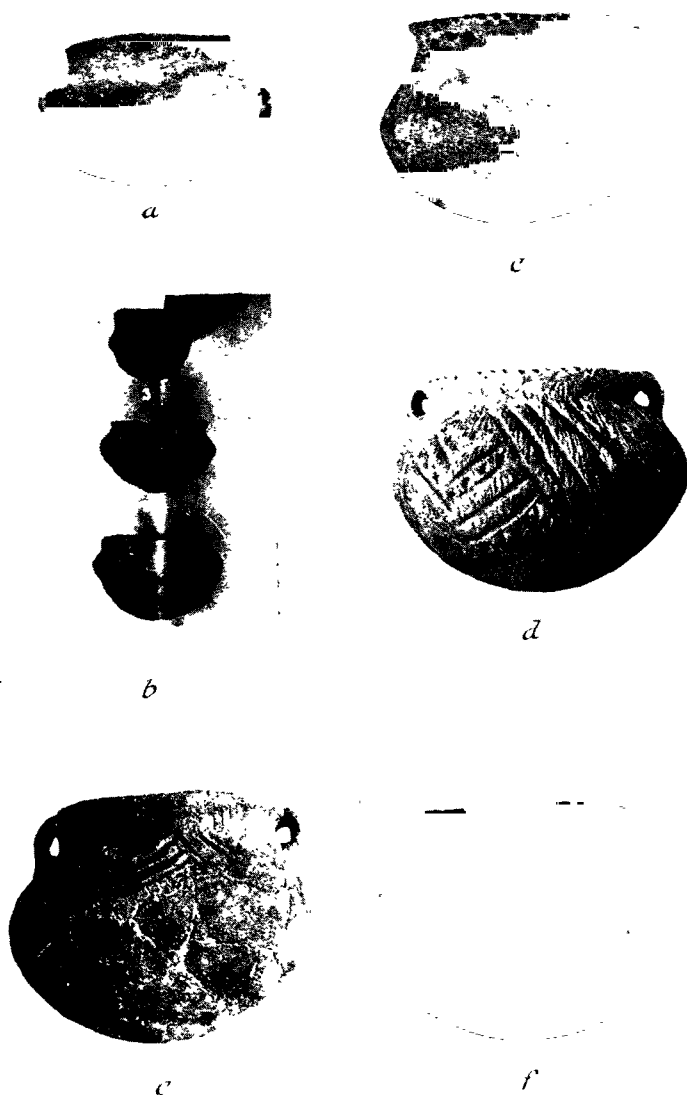


PLATE XII

a. EM 101. Adult meso burial in Zone I of Middle Level. The largest of the "knobbed" clay pots. 1/4. b. Small "knobbed" pots, 1, WM 62, 2, EM 92, 3, EM 112 3/16. c. EM 12. Big East Mound. Same level as "antler point" pots. A pinkish mineralized grease-line extended about half way from bottom around the inside. 1/4. d. EM 3. A fine typical "antler-point" pot from Middle Level slightly in gravel, shell-tempered. Zone II. 1/4. e. 3EM 14. "Antler-point" pot. Zone II, Middle Level. 1/4. f. Fine example of shell-tempered "antler-point" pot from Zone II of the Big East Mound. 1/4.

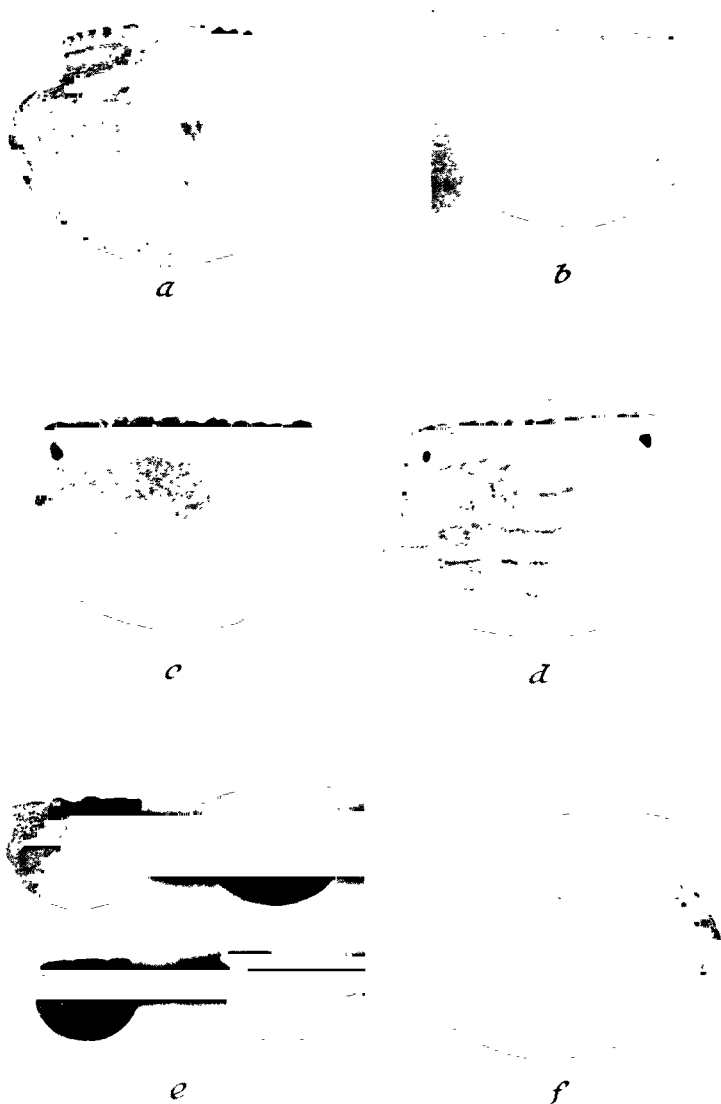


PLATE XIII

a. EM 72. "Antler-point" pot with skeleton female broad-head. Shell-tempered. It has two broad loop handles. All of this type of pot contained carved clam shell spoons. Zone II, Middle Level. 3/16. b. EM 5. Big East Mound. "Antler-point" pot below average size. Shell-tempered. +1/4. c. WM 53. Shell-tempered "antler-point" pot from Big West Mound with prone female adult. Zone II of Middle Level. 1/4. d. WM 58. With prone female adult round-head. One handle is broken off. Otherwise this pot is undamaged. 1/4. e. Big East Mound. The two shell-tempered pots at left from Zone I, Middle Level. The two grit-tempered ones at right are from the Middle Level above gravel, Zone II. The left upper corner figure is one of the "knobbed" pots. It and the one below bear crudely incised decoration. 3/16. f. EM 15. Big East Mound. Grit-tempered, above gravel. 1/4.

The largest and finest specimens accompanied brachycephals buried below ground level. I call them "antler-point" pots because of the ornamentation around the shoulder, plate XII, d, e, f, plate XIII, a, b, c, parallel rows of meanders or festoons interlined with dots, or right and left diagonals in parallel in combination with lines, dashes or dots. These lines about 3 mm wide are impressed with a blunt-pointed instrument, possibly an antler-point, many of which occurred in the two big mounds or near them. Under one skull, EM 115, were a round iron-clay stone, polished and flattened on one side, several antler-points and a spade-like piece of large antler, all of which suggest usage in the making of pottery. A rather common form of decoration was a single meander around the shoulder, impressed with the finger. Potsherds were numerous between the Black Seam and Ash Layer, many of them quite unlike the burial pots, in that they are coarser and thicker and differ in rim shape and decoration. The differences may be merely utilitarian, fragile "antler-point" pieces serving as mortuary vessels and the coarser ware being used more commonly in camp life.

The majority of pots lack handles, but many have two, one opposite the other, plate XIII, d. These are short loops of round or elliptical section. Occasionally lips or lugs appear instead of loop handles. The rim edge is usually indented or crenulated, done with a tool or the fingers. Many of the "antler-point" specimens are rather artistic—round, symmetrical, and attractively decorated. However, as works of art they are entirely aboriginal. The small knobbed pots from near the Black Seam are smooth-surfaced with the exception of two which bear crude incised decoration. None have the roughened surface prevalent in the Middle Level, plate XIII, e, an external finish which may be confused with "cord-modelling" or marks made by patting the clay vessel while moist with a cord-wound stick or paddle. On some of the pots, there seem to be occasional marks of twisted cords; others have a very rough bark-like surface which may have been done by brushing rather than patting.* See plate XIII, f. I find no impressions of nets, matting or cloth on any of the specimens. In only three examples do I find any departure from the globular low-rimmed pattern. EM 39 with but one stub-handle resembles a stew pot, plate XIV, a.

It is thick-walled and undecorated. EM 114 although globular-bodied has a high neck without beaded rim, sloping inward, plate XIV b. EM 64 has a rather high neck and is elaborately decorated with diagonals, horizontal lines, and dashes, plate XIV, c. Neither animals nor human beings are portrayed, face or figure, on any of the pots or artifacts. The grit-tempered pots are not so elaborately ornamented. The largest one EM 24 is 245 mm in diameter and 152 mm high. The largest "antler-point" specimen, EM 72 measures 235 mm by 165 mm. In the reconstruction of broken pots, plate XIV, d, I use the same method as with fossil animal bones, cementing the fragments together and filling in gaps with tinted dextrine plaster, plate XIV, e. This process requires patience, but results in a durable restoration no matter how thin or small the fragments may be. One specimen, EM 36 showed an aboriginal repair job. A hole about 8 mm diameter had been accidentally punched through the bottom and the damage remedied by burning on a patch of clay over the hole from the outside.

The potsherds of various neighboring localities seem to be of two kinds which occur together: coarse rock-tempered pieces with low necks and bark-like surfaces; and extremely coarse and thick high-necked pieces with large crystalline tempering medium, brick-red burned and bearing punch-stamped and rouletted decoration, plate XIV, f. Among the thousands of fragments found in and around the mounds, not one resembles this last-named variety so common elsewhere.

COPPER

This metal appears sparingly in the Upper Level and is not common in the Middle. See plate XV. Above are a few plates bent into small hollow cones; below a few implements and ornaments, heavily encrusted with green oxide. I found 3 copper celts in the Big East Mound. These were in the east to west trench wherein was the long-head EM 26, and lay between the Black Seam and Ash Layer beneath human bones disturbed by a previous excavation. The longest measures 102 mm, the shortest 83 mm, and the thickness varies from 6 to 10 mm. The adolescent EM 21 in the Middle Level with tiny plate copper beads below the



PLATE XIV

a. EM 39. This odd-shaped, thick, shell-tempered pot lay close to the skull of a narrow-faced, round-head female in Zone II of Middle Level, directly over the deeply buried long-head, EM 41. 1-4. b. EM 114. This high inward sloping neck is unusual. The pot is thick-walled, shell-tempered and ornamented with circular indented lines. 3-16. c. EM 64. This is an unusually high-collared "antler-point" pot, shell-tempered. 1-4. d. EM 71. Some of the pots were badly crashed but I collected all of the pieces and eventually restored the specimens. Middle Level, Zone II. 1-2. e. EM 71. This pot of the Middle Level, Zone II was badly crushed when found and had long been so. I finally got it together as shown. -1, 4. f. Stamped and rouletted potsherds. Such coarse, brick-red high collared grit-tempered pieces are not found on the Fisher site. These came from the point of land where the Des Plaines and Kankakee Rivers meet a mile or more below Fisher's and were accompanied by large stemmed and notched flint arrowpoints. 1-2.



PLATE XV

Copper artifacts

The three top copper celts are from the Middle Level of the Big East Mound. The two bead necklaces are from the Middle Level of the Big East Mound. The larger one was with a child WM 14. At right center is a copper nugget with broad-head, EM 31 in the Zone II of the Middle Level

The two plate cones at right were in the Upper Level or top of Middle Level. At bottom left are two plate ear discs and above them a leather button to which one of the discs was attached.

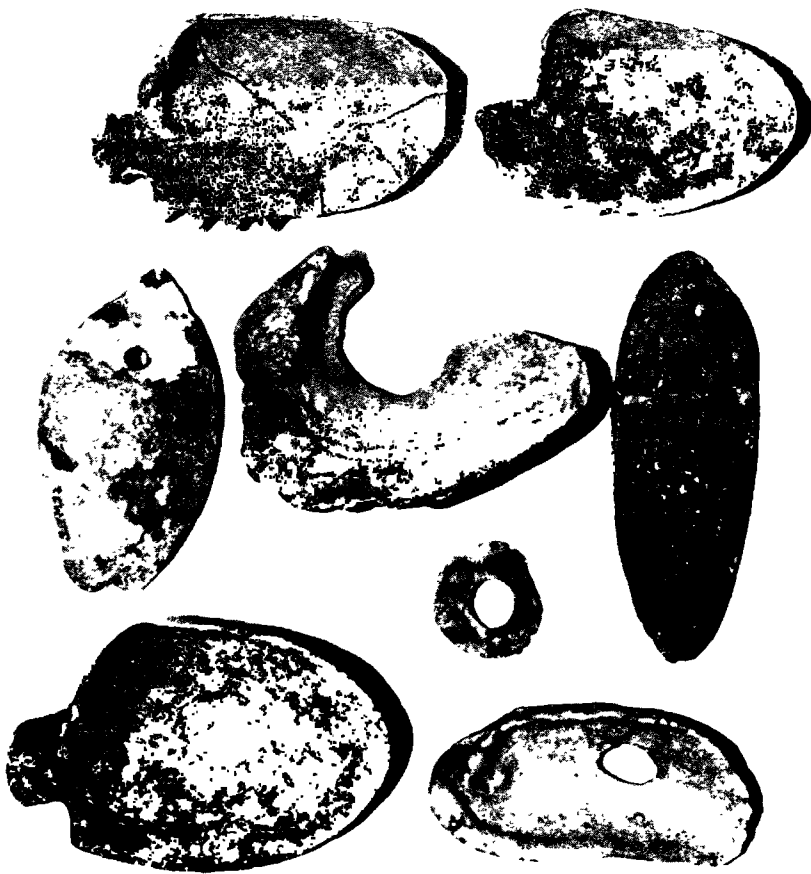


PLATE XVI
Shell ($3\frac{7}{8}$ size)

The two top and bottom left corner figures are spoons carved from clamshells and found in clay pots. Zone II Middle Level.

The center figure is a thick clam-shell with 1" round hole in center. Each side of this is a pendant. The one at right was on the sternum of a round-head child EM 21. The small circular piece below is a pendant from the neck of a child WM. All the above are from the Zone II of Middle Level.

At bottom right is one of many clam-shells with rough holes in them—from the diggings in Zone II Middle Level.

breast-bone has been referred to, as have female adults with thin copper discs so close to the ears as to stain the temporal bones green. A two-ounce nugget of virgin copper under the skull of a broad-head, EM 31, would indicate that implements were made upon the site from raw material obtained elsewhere. EM 127, a prone adult brachycephal on gravel, wore a necklace of copper beads, each bead plate rolled to a tube about 12 mm long and 6 mm diameter. WM 14, a round-head child in the Big West Mound, had a similar string in which the size of beads varies greatly. In these two cases, also in a third, the ornament encircled the neck. The Southwest Mound produced four large tube beads.

SHELL

The occurrence of marine gastropods fabricated into ornaments is interesting. See plate XVI. The long-head WM 76, deep in gravel as has been noted, had two of these shells, notched around their lower extremities. These were touching the face. With EM 98 was a small tube 49 mm long and 6 mm diameter; the column or central part of a marine gastropod. Two other shorter and thicker shell beads were at the throats of broad-heads in the Middle Level. These may have been made from thick river clam shells. They are largest at the center, tapering to both ends. At least four species of clams abundant in the Des Plaines River served as food for the aborigines and some of the shells were fabricated for use. Seventy-five per cent or more of the clay pots contained shell spoons, the hinge portion being trimmed down and the large and double-notched to form a stub handle. Several were scalloped on the lower margin and one had four long prongs which made it appear like a combination spoon and fork. In some of the less deeply buried pots the clam-shells were uncarved and might be considered unutilized except that each reposed within a pot. Many of them bear brown gritty encrustations.

I secured shell pendants from three burials, all placed upon the breast. Two are pierced with tiny holes at one end, and all three have 2 larger holes in the center. Two are of elliptical form, the third is circular. Various problematical fragments accompanied skeletons in the Middle Level.

In the diggings between the Ash Layer and Black Seam were numerous clam-shells, most of them whole, others broken in pieces or with a large rough hole through the center. It may be that the aborigine treated a clam as we do a nut, breaking into it to secure the contents. One very thick shell had a large round hole through it, the upper portion cut away and the lower border much worn. This had evidently been used as a tool of some sort, probably a scraper. Shells of land-snails were common in the diggings, but none show marks of utilization.

ANIMAL BONES

These occurred abundantly in the diggings. See plates XVII and XVIII. Deer bones were the most common, and among these the scapula predominated. Only the articular end was preserved, although the blade could occasionally be recognized by splinters. Foot-bones were plentiful; the upper ends of humeri and femora absent. From the numerous specimens I have thus far identified the deer, elk, bear, canids, wildcat, otter, beaver, mink, weasel, skunk, raccoon, muskrat, rabbit, wild turkey, heron, goose, and soft-shelled turtle, and have recognized small rodents, birds, fishes, and turtles. Frequently unfabricated animal bones served as charms or for other purposes, being found beneath skulls in company with stone and bone artifacts. Often they so occurred in pairs. In the EM 115-EM 116 cache were two tarsal bones representing a wild turkey and heron, two deer astragali or anklebones, two incisor teeth of beaver, a mink's lower jaw, bird bones and several antler-points. Two wildcat humeri accompanied another skeleton. Turtle shells commonly accompanied broad-heads but are much disintegrated. Several of them show red stains, and one at least was pierced. Deer astragali were abundant. Although these are smooth, I have not been able to find one that bears unmistakable stamp of use. Deer and elk phalanges were cut off at the proximal end and hollowed for some purpose. Many such pieces in close association with the skeletons were doubtless used, contrasting with the numerous burned and unburned fragments scattered through the diggings between the Black Seam and ground level.



PLATE XVII

a. Bone Pins from under human skulls. The one at right (Raccoon ulna) is from Zone I, also one at bottom. The other four are from Zone II 1-3. b. WM 49 Male round-head. Stone tablet and 3 bone cylinders, and bone fish-hook. 1/3. c. EM 115-116. Objects under skulls—in part. 2 long deer metacarpal draw-knives, a deer astragalus, 1 stone celt, 1 stone tablet with 4 bone cylinders, 1 antler point, 1 beaver incisor tooth, 3 chert arrowpoints, small mammal jaw and metatarsal bone of wild turkey. 1/8+. d. Animal bones from the diggings. The three upper figures are upper and lower jaw parts of deer. Below them are upper and lower jaw fragments of elk. In lower right hand corner is part jaw (of canid?) showing chopping marks. In left corner is jaw of dog with beaver jaw above it. 1/8+. e. Bone artifacts. The long central object is a deer metacarpal cut off at each end and hollowed throughout its length to two diagonal holes in the lower end. WM 49. At right is a long pin made from a deer scapula. Two bone arrowpoints are between them. In bottom right corner are three pegs notched around one end with a flat tablet to the left of them. In top left corner is a soft-shelled turtle costal plate found beneath the chin of a skull. Below it, two carved bear's jaws. Bored antler point and bored bone in lower left corner. 1/4-. f. EM 83. Stone tablet with 7 antler cylinders adhering (2 broken off). Side view.



PLATE XVIII

Animal bones buried with Human Skeletons. (7/16 size.)

Top center: Lower beaver jaw. Directly under it (center) is one of two deer-astragali with EM 115.

Left top corner: Part of pin made from a deer scapula. A similar piece is to the right of it.

Right top corner: Metatarsal of wild turkey with EM 117. To the left of it is a wild cat humerus, one of a pair.

Center: Mink's lower jaw. Below it at left is an otter's jaw with EM 2 and a raccoon jaw at right.

Left lower corner: Penis bone of raccoon. To the right of it is an antler point notched near end and a small mammal jaw with EM 115 to the right of that.

Bottom center: Fish jaw with two antler points to the right of it.

Bottom right corner: Fish spine with beaver tooth (EM 115) above it.

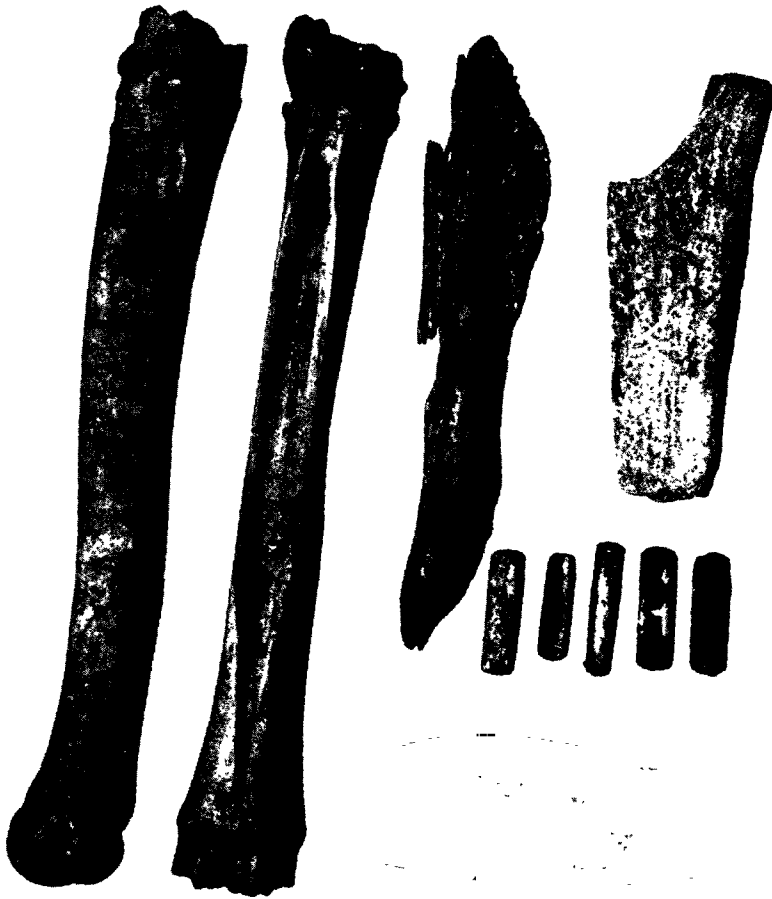


PLATE XIX (3/8 size.)

The smooth stone tablet and bone cylinders in lower right corner were with a meso EM 83 female adult in Zone I of Middle Level.

The other four pieces shown were under the head of the round-head EM 115.

The flat piece at right, top, is antler; to the left a problematical piece made from an elk scapula. The two left are bone draw knives—all from Zone I or II of the Middle Level.



PLATE XX

Top left corner: Bone (projectile) point with WM 5.

Top center: 3 of 14 antler points at the neck of Broad-head type EM 19.

Top right corner: Part draw knife with EM 116.

Center: Pendant of two carved bear jaws. To the left of this is an elk's toe-bone cut off at one end and hollowed out. To the right are three tubes or beads of shell. Below is an antler tip with EM 116.

Bottom row, left corner: Polished bone (arrow) point bored and dentated at base. Three other similar pieces are in this row. The large central figure has a smaller hole bored in base and is curved with blunt point—probably an ornament.

(All 3, 8 natural size.)

BONE ARTIFACTS

Implements of bone occurred from +48" to -24", (plates XIX and XX), the deepest being pins made from fish spines and bird metatarsals with so little finish that I could hardly be justified in calling them pins except that all of them were found at the backs of human heads. Higher up in the grey and black dirt were unmistakable pins highly polished and pointed, plate XVII, a. One was made from the ulna bone of a raccoon. Another had been cut from a deer scapula. This is 168 mm long, the top flaring to 38 mm. One female adult wore at her throat a two-piece pendant made from the anterior part of a bear's lower jaws separated at the symphysis. The bone and tooth roots had been cut away, emphasizing the large canines. The type broad-head EM 19 wore a 14-piece antler-point necklace. Antler-points appeared frequently in the diggings, some unfabricated, others bored longitudinally. Of the latter, several were curved with blunt points. Three were straight, sharp-pointed, and highly polished, one of them having a dentate border. Near a female adult round-head WM 5 was a long bone dart-head, which may possibly have made a round hole, present in the top of the skull. Under the skull of WM 49 a male adult round-head was a fine bone fish-hook, the only one found. A slight enlargement of the shank was its sole provision for attachment to a line. I note that although bone artifacts were bored longitudinally, none were pierced with small holes. WM 49 had several other interesting objects. One made from a deer metatarsal, with the two ends cropped closely, is highly polished and hollow throughout its length. In the distal end are two short diagonal holes connecting with the bored shank, plate XVII, e. This implement served me nicely to smoke two cigarettes at once, a use however for which it could hardly have been intended. A dark green polished stone tablet and four antler cylinders completed the list of bone objects with this burial, plate XVII, b. The tablet is celt-shaped, although thin and with well rounded edges. The cylinders are rather flat on one surface, round on the other. The largest is 82.5 mm long and 12.7 mm greatest diameter, the smallest 55.7 mm \times 7 mm. They adhered to the tablet when I found them. With the double round-head burial EM 115-116 were various bone objects, all beneath

the two skulls. Each had a pair of deer metacarpals hollowed out and concave on one surface so as to resemble double-edged draw-knives, plate XVII, c. The scaphoid wrist-bone in three of the four cases was still in place, showing that they had been articulated when the implements were in use. One pair buried in gravel was finely preserved. The other two were rather decomposed, due possibly to the dark-red pigment in which they lay. Another long implement made from an elk scapula was of problematical use, as was a tapering spade-like piece of carved antler 146 mm long, 57 mm wide, and 3.5 mm thick. Tiny bones 43 mm long, tapering at both ends, and 3 mm in diameter were notched at one end and resemble cribbage pegs. There was one flattened piece pointed at each end, and several other larger broken points. Adhering to a rudely shaped flat stone tablet were 6 cylinders of antler flattened on one side and the ends rounded like those found with WM 49. A third example occurred with a young female adult EM 83. The tablet 105 mm long and 48 mm wide is celt-shaped in outline although only 16 mm thick without used edges and unpolished. Six of the antler cylinders adhered to one edge of the tablet, four to one surface, lying close and parallel to one another, large and small ones alternating, plate XVII, f, plate XXI, a. The large cylinders are about 40 mm long and 11 mm wide, the small ones 35 mm by 8 mm. The cementing substance is tenacious and gritty, similar to that encrusting the shell spoons. This stone tablet-bone cylinder combination may have been a popular game like marbles or tiddledewinks, the stone tablet being a "shooter." With WM 34 a female adult was a slender bow-shaped piece 84 mm long and 4.7 mm wide convex on the outer surface, flat on the inner. I have seen similar specimens from elsewhere, defined as weaving implements. The one with WM 34 was under the chin. A short scapula pin lay across the occipital near the lambda. Possibly both pieces were ornaments. These and all other specimens polished and finished so as to be recognizable at a glance as artifacts, originated somewhere above the Ash Layer. Cases WM 49, WM 34 and several others show the originating plane of burial to be below the Black Seam. The cruder, less finished pieces with EM 19 and at least two others, originated below the top Ash Layer seam. This



PLATE XXI

a. EM 83. Stone tablet with 7 antler points adhering. Two more became detached. b. WM 45. Skull of child enclosed in fabricated deer antler, just as I found it. The lower jaw and skeleton had dropped a foot farther down. 1/8. c. EM 26. Four problematical "worked" flints under skull of type long-head. 5/16. d. Chert arrow-points from Middle Level of the Two Big Mounds. 3/8+. e. Restored pot from the Gravel Pit. It should have been made lower, more squatty. Note the collared rim. 1/4. f. Top—Otter skull with broad-head, EM 2. Middle—Raccoon skull from WM diggings. Bottom—Mink skull from ancient borrow over the long-head, WM 76. 5/16+.

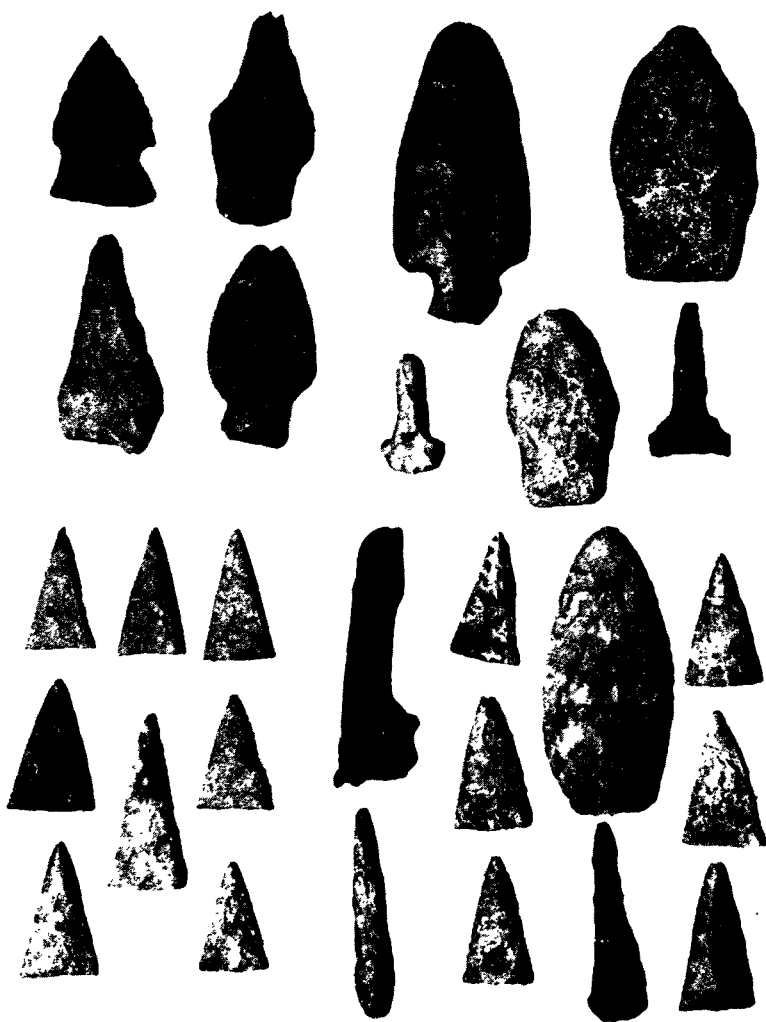


PLATE XXII

The top 9 figures are from the diggings, from 18" to 6" above the Black Seam.

The bottom half of picture, the 8 chert arrowpoints at left were in Zone II of the Middle Level with male adult EM 22.

The 8 pieces at right were with the type broad-head EM 19 in Zone II of the Middle Level. In the center is a fourth left human metacarpal with small triangular chert arrowpoint embedded in the base. This came from the Gravel Pit.

suggestion of two bone cultures may be considered unwarranted, and yet it is but one of numerous cases where repeated occurrences of a like nature point to more or less obvious conclusions. In this instance, a crude bone culture appears to underlie a finer one.

CHIPPED STONE IMPLEMENTS

The problematical flints accompanying the long-head EM 26 are the sole suggestion of a stone culture in the Lower Level, plate XXI, c, plate XXII. Their smooth surfaces and edges denote them to be much older than the fresh flakes and spawls abundant in the diggings above. They appear to have been worked; that is chipped by human hands and yet their shapes do not denote any specific use. It seems more than a coincidence, however, that they should be clustered beneath a human skull in gravel, elsewhere barren of them.

The Middle Level is given up entirely to arrowpoints of triangular and slender forms without notches or stems and the material used is chert, plate XIV, d. These occur solely with brachycephals. In the EM 115-EM 116 bone pillow previously described were 3 small triangular and 1 slender chert point and 6 small hammered chert lumps. The triangular points are from 28.5 to 30.5 mm long, 14 to 16 mm wide, sharp-pointed, keen-edged and thin. The slender points, of circular or elliptical cross-section 30 mm more or less in diameter, are from 25 to 38 mm long. I have found small triangular chert and flint arrowpoints upon the surface in other localities of this region but they are not to be confused with the thin, keen-edged, finely chipped specimens from the Fisher Mounds.

POLISHED STONE

Implements of hard polished stone consist wholly of "celts" which could have been used very effectively as tomahawks, for they are keen-edged and well-made, plate XXIII. Two above the Ash Layer are chisel-shaped, long and narrow, with the scratches of grinding still on them. One from the diggings in the Black Seam of the Big East Mound is 165 mm long, 38 mm wide at edge and 28.5 mm greatest thickness. The second from about the same level in the Big West Mound is 152 mm long, 33 mm wide at edge and

22 mm greatest thickness. It, too, bears scratches from grinding. This second piece was found driven into the face of a female skull WM 5. Three celts with brachycephals below the Ash Layer are shorter and made of softer grey-green stone. The largest is 98 mm long, 45 mm wide at edge, and 30 mm thick. One with the type broad-head EM 19 has been mentioned as touching a long stain in the gravel, which I interpret as a wooden handle. I found several hammerstones in the diggings, these being quartzite pebbles edged from striking on two opposite sides. One 117 mm long and 64 mm greatest diameter is edged at each end. One piece of sandstone ground flat on one side, convex on the other, has a long groove on the flat side and appears to have been used for smoothing down arrow-shafts.

SMALLER MOUNDS OF THE MAIN GROUP

The four or five smaller mounds around the two big ones have yielded some burials and a few artifacts. Originally inconspicuous, they have now about disappeared after several years of cultivation. Two of them, the West and Southwest mounds can yet be distinguished by those who knew of them; but three years of cultivation have obliterated the remainder. I dug into both of these mounds in 1912, working rather disinterestedly, therefore carelessly even though I found some prone round-heads—female and children—over crouching or irregular mesos and long-heads. Aside from potsherds, charcoal, ashes, clam-shells and splintered animal bones, I secured no relics. Two lower burials in gravel were what I now define as semi-concealed graves. In the fall of 1924 the Southwest mound yielded a fine long-head cranium SW 1 at -48" in a concealed grave that I never would have discovered had I not learned by this time that digging deeply, even though blindly, occasionally produced results. At -6" were four large copper tube beads.

The West mound yielded two mesos, one a large young adult W 1 whose skull I took out at -36", embedded in a gravel matrix. The North mound NM contained several much crushed female round-heads. In neither of these two places were there any relics with the skeletons except clamshells, grit-tempered potsherds and splintered deer-bones, and these occurred very sparingly near the surface.



PLATE XXIII

Polished Stone Celts (3 8 natural size)

- Top row, left: This was jammed into the nose of WM 5. Middle Level, Zone I.
Middle: From the diggings, Zone I, Middle. Right Turned up by plow slightly
to west of Big West Mound.
- Bottom row, left: Buried with type broad-head EM 19.
Middle: Buried with EM 116 Middle Level.
Right: Buried with WM 25 Middle Level.

THE LODGE PITS

I arbitrarily define the numerous saucer-like depressions as "lodge-pits" because they appear to be the remains of dugouts, possibly once roofed over with bark or skins. These would have made excellent shelters in cold weather. When working in freezing temperatures my assistant and I always found comfort from the biting wind sweeping over us after digging down to a depth of four or five feet. While excavating the two big mounds we occasionally sank trial holes near the rims of pits. One of these holes to the south encountered at -12" the broken skull and some bones of a dog and at -18" a much broken grit-tempered pot unlike those secured from the two big mounds. Beneath the pot, amid broken animal bones, clam-shells and potsherds, were a complete human skull and pelvis bone. The skull S 1, a young adult male meso, had a round perforation over one eye which might have been made by a bone arrowpoint nearby.

Near another pit rim west of the first one 18 inches below the surface, were two prone female skeletons close together. WS 2, whose skull is in fine condition for measurement has a round, rather high skull with short face. No relics, potsherds, or splintered animal bones accompanied the skeleton, which appears quite recent, much more so than S 1.

A third hole north of the Big East Mound at another point through charcoal and ashes disclosed no human remains; but 6 feet below the surface, 5 feet in gravel were bones of dog, deer, and turtles with a bushel of clam-shells at the bottom. The two halves of each shell were together, and evidently had not been separated. In the debris was a limestone pipe of "platform" or monitor type with conical bowl resting on a boat-shaped base, the latter scratched with lines possibly intended as symbols. This cache appeared quite recent, the bones and shells being much fresher than in any other excavation and the hole could be traced upward to the dark surface soil.

Four holes in the centers of as many pits yielded nothing. When they were first plowed over and the dirt washed with rain, I picked up many potsherds and splintered animal bones, a few fragments of copper plate and only one bone artifact, the pierced

canine tooth of a bear, which was no doubt comparatively recent as it lay embedded in sod, hardly two inches below the surface.

GRAVEL PIT MOUNDS

Of the three Gravel Pit Mounds or burial heaps 100 yards west of the main group, the south one most resembling a mound was destroyed by removal of gravel several years ago. It was 25 feet in diameter and scarcely two feet high. I estimate that some 25 adults were buried in it. The workmen took away several good skulls but I secured some of the broken specimens and numerous limb bones. No long-heads or mesos were in the lot, and no ashes, potsherds, clam-shells nor broken animal bones. Among the human skeletal parts was a fourth left human metacarpal, in whose base was embedded a small triangular chert arrowpoint, which had pierced the palm of the left hand near the wrist and protruded at the back. Apparently the injured person had made an unsuccessful effort to remove the missile, finally permitting it to remain, with the bone enlarging around it. A shattered clay pot lying on the pit slope was buried near the mound but not in it, plate XXI, e.

The gravel pit also encroached upon a burial-heap to the north. Being shapeless in outline and only one foot high this could scarcely be called a mound. From among the bones, broken skulls and jaws tumbled down, I secured two specimens; a cranium, GP 1, and fine skull minus lower jaws, GP 3. The former is a round, high cranium; the latter a meso, high with moderately broad nose, long face and high orbits. No relics or camp refuse accompanied these specimens.

The third and smallest mound of the trio was beyond reach of the gravel-pit. I sank a hole in it and found three adult skeletons huddled together, scarcely a foot below the surface. There were a few grit-tempered potsherds, and clam-shells near them. A marked peculiarity, not observed elsewhere upon this site, was the manner of burial. The three skeletons lay upon their sides, every bone in place, with arms and legs so tightly flexed that they must have been tied into those positions. The distal ends of the ulnae and radii almost touched the humeri below the neck; and each heel

was against the pelvis. Traces of red powder appeared around these skeletons. One skull, an adult round-head, NGP 2, is well preserved.

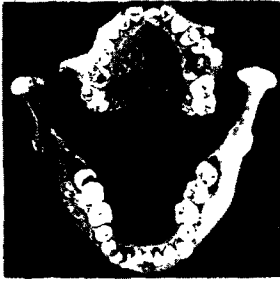
NOTES ON THE SKELETONS

The intention here is to comment on the best preserved and most representative specimens, striving to illustrate as briefly as possible the various types and to determine if possible whether or not the succession of human occupations suggested by the stratigraphy of the mounds and the cultural changes therein is supported by evidence of the skeletons, particularly the skulls. Eliminating young children and adults hopelessly distorted or not yet mended, there are at present 87 available, whose dimensions I tabulate in two groups: one of 42, wherein the correct position of each individual is known; and a second of 45, wherein there is some doubt as to just where the graves originated. The skulls are grouped by levels and zones according to stratigraphic evidence only. The measurements and determinations of age and sex follow the precepts set forth in Hrdlicka's *Anthropometry*. The measurements, all expressed in millimeters, are not to be considered as final, for the limited time I have been able to spend upon them and my lack of special instruments do not permit of absolute accuracy. However, the many crushed and distorted specimens call for correct judgment as much as accuracy in making measurements which are given for the specimens not as they actually are but what they would be undistorted; therefore my figures must suffice for the present to illustrate the various types by approximate sizes and proportions. All dimensions are in straight lines except the nasion-bregma and nasion-opisthion arcs which are taped over the convex surfaces. To the actual length of face, nasion to menton, should be added tooth wear wherever the upper and lower incisors articulate and are reduced by abrasion. Before commenting on the skeletons individually, certain characteristics may be applied to them as a whole. With few exceptions every cranial vault is elevated along the sagittal suture so that viewed posteriorly, the skull outline is roughly pentagonal. The two upper incisor teeth are thick and "shovel-shaped," this feature showing to best advantage in young individuals with teeth unworn,

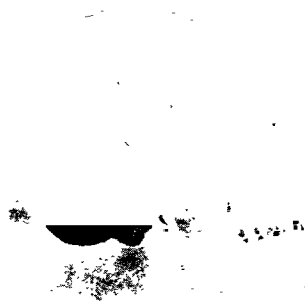
plate XXIV, a. When badly worn, the upper two incisors are with difficulty distinguished from premolars. Of the limb bones, the femur is flattened diagonally or front-to-back below the neck, and the tibia shaft is flattened laterally, these peculiarities being exaggerated in males and often absent in females. The nose is generally much depressed below the nasion. The nasal bones are long; lower nasal margins sharp in a few specimens, round or obscure in many, and guttered in several. As a rule the forehead slopes strongly without prominence, the exceptions occurring in some of the more recent skulls. All adults have the third molar present in both upper and lower jaws.

SKULLS OF THE UPPER LEVEL

While there are numerous fragmentary skeletons above the Black Seam of the Big East Mound, no complete skulls are available. The Big West Mound however has yielded several, possibly more, but there is some uncertainty as to their plane of origin. Most of them lay beneath the Black Seam and some doubtless originated above it but previous excavations and animal burrowings had in many places so churned up the dark soil that determinations by strata were impossible. However, one case, a prime male adult, WM 38, appeared to have originated above the Black Seam directly overlying two other skeletons, WM 39 and WM 40, the latter a round-head which seemed to have long antedated the two above it. No relics accompanied any one of these three skeletons. I have chosen WM 38 as typical of the Upper Level. The skull is complete, undistorted, and very rugged. The limb-bones denote a rather short and powerful individual. The cranium measures 176 mm long, 141 mm wide and 136 mm high, denoting a round, fairly high head, plate XXIV, b, c, d. The nose is large and broad, with lower nasal margins obscure. The nasal bones are extremely narrow, the combined width at one-third their length from the nasion being only 4.7 mm, scarcely half the width of most others. The bizygomatic breadth of 145 mm exceeds the skull width by 4 mm. The length of facial index is short, but as the incisor teeth articulate perfectly and are worn down at least 7 mm the face may be considered as that much longer, making the face



a



c



b



d



f



e

PLATE XXIV

a. EM 2. Young female adult Broad-head. Upper and Lower jaw. b, c and d. WM 38. Male adult Round-head; type of Upper Level. Note the prominent forehead, broad nose and short upper lip. 3/16. e. WS 2. Upper Level. Short-faced female Round-head from near lodge-pit. No artifacts. Prominent forehead and short upper lip. 3/16. f. WS 2. Round-head with unusually short face. 3/16. (See also Plate XXV, a.)



PLATE XXV

a. WS 2. Female, young adult Round-head from Upper Level. 3/16+. (See also Plate XXIV, e and f.) b. EM 126. c. EM 37. Broad-head. Note the small triangular chert arrowpoint in left temple as found. Middle Level, Zone I. 3/16. d. EM 37. 3/16+. e and f. EM 19. Type Broad-head male adult. A typical prone extended burial with bone, chipped chert and polished stone artifacts, among which were small triangular chert arrowpoints. Found on gravel, Middle Level, Zone II. The camera pointing perpendicularly to plane of face makes the face look longer. The width at parietals appears smaller, being beyond the focus. 3/16-.

meso. From base of nasal opening to alveolar point the distance is 15 mm, that is, very short compared with the other skulls. The forehead is prominent; and this combined with the large nose and short upper lip gives WM 38 decided individuality.

WS 2, a young female adult from near one of the lodge pits and close to the surface, is doubtless a comparatively recent burial, plate XXIV, e, f, plate XXV, a. The skull resembles WM 38. It is round-head with prominent forehead, broad nose and short upper lip.

Of doubtfully tabulated specimens, NGP 2, also a comparatively recent burial from the Gravel Pit Mound Group, approaches the type. It is one of three clustered together, the other two being short and powerful individuals. NGP 2 is more slender-limbed,—an old male adult round-head with broad nose, short upper lip and broad face, the bizygomatic breadth of 148 mm exceeding the width of skull by 8 mm.

WM 39 underlay WM 38 closely, and although an earlier burial did not appear to have long antedated it. The skull is that of an old male. The cephalic and height-length indices show it to be a meso and quite high. The bizygomatic breadth is 142 mm, 3 mm greater than width of head. The nose is narrower and the orbits higher and narrower than in WM 38.

SKULLS OF THE UPPER LEVEL OR ZONE I OF MIDDLE LEVEL

All of these are cases where the stratigraphic record is more or less uncertain. Perhaps WM 57 is typical. This is a prime adult male lying half upon its side with knees drawn up at 12" above ground level and without artifacts. The skull is massive and rugged; 178 mm long, 147 mm wide, and 137 mm high, a round rather high specimen with sloping forehead and meso nose inclined to be long, lower nasal margins obscure. The face and orbits are meso. The incisors, like the other teeth, articulate perfectly and are considerably worn. WM 67 an old male has a cephalic index of 79.4. The skull is high, nose rather broad and face wide for the length. This skull overlay a cache of rejects or rough unstemmed chert arrowpoints.

GP 3 from the Gravel Pit is a female adult skull minus lower

jaws which I consider a comparatively recent burial. The cephalic and height-length indices are 78.3 and 82 respectively, denoting a high meso head. The nose and face are meso; the orbits quite narrow with an index of 100.5.

WM 7, a female adult, has meso cephalic, nasal, facial and orbital indices. In the majority of the Fisher skulls, the coronal sutures of the cranium are simple but in this specimen they are complexly convoluted.

WM 32, a female adult, is a meso with high head, broad face, and low orbits. The nose is exceptionally broad, nasal index 67.1 and the features are inclined to prognathism.

EM 126, an adolescent round-head, was a prone burial 18" below ground level, but since it was at the rim of the mound, almost outside of it, I found no strata above the grave to guide me. In the upper part of the mounds, skulls show little or no prognathism, the chins project prominently and the upper and lower incisors articulate. EM 126 has a gnathic index of 113, the chin recedes and the upper incisor teeth overlap the lower ones. The teeth are large, particularly the upper canines, which stand out prominently from the others. See plate XXV, b.

SKULLS OF THE MIDDLE LEVEL. ZONE I.

Here are included all burials originating beneath the Black Seam and above the Ash Layer. I also include certain burials that originated in the Black Seam; that is, the thin compact layer had been pierced and the graves filled in, the dark soil above continuing upward undisturbed. EM 83, a young female adult, lay in a studiously arranged crouching posture, with a tiny infant pressed closely to her and some bone and stone artifacts near the head. The skull, much crushed and compressed diagonally, I interpret as a high meso with broad nose and long face. The nasion-opisthion arc length is 378 mm.

EM 100 is a very similar case. It, too, is a young female adult which lay in a set crouching posture with a tiny infant. No relics accompanied this burial. The cephalic index of 71.2 would indicate this to be a long-head, but narrow-head would state the case more correctly, for the skull is only 124 mm wide. The nasal, facial, and

orbital indices also show extreme length or height in proportion to the width. All of the measurements are doubtful, seeing that this skull has been much compressed laterally.

EM 101, another example, was a prone adult accompanied by a knobbed, grit-tempered pot without decoration. The skull is compressed diagonally but I interpret it as a meso; nasion-opisthion arc length 380 mm.

EM 102, also a meso with diagonally compressed skull, has a 374 mm nasion-opisthion arc length. This was a prone male adult without relics. EM 102 and EM 101 were the only graves, originating beneath the Black Seam, that had penetrated the Ash Layer.

WM 25, a prime male adult, appears to be a round-head with a cephalic index of 81.4, this figure being quite doubtful, however, as the skull is diagonally compressed. It is a broad-faced, broad-nosed specimen with low orbits; orbital index 73.8.

WM 26, an accompanying burial, is a female adult meso with broad nose and long face. The skull vault is ridged along the sagittal suture into an exaggerated crest.

EM 37 and 38 are of very different type from those already enumerated. They lacked lower jaws and skeletal parts when found and yet I was unable to discern any disturbance of the earth about them. A small triangular chert arrowpoint was embedded in the left temple of EM 37 and I could see it as the dirt fell away from the skull before I touched it, plate XXV, c, d. This is a rather old male, rugged and heavily ridged for muscle attachments. It is hard, heavy and undistorted. The length measures 173 mm, width 149 mm and height 145 mm. The bizygomatic breadth of 152 mm is 7 mm greater than the width of skull. The cephalic and height-length indices show this to be a broad, high head with meso nose and face and high orbits. EM 38 is a female adult round-head. These two lone skulls were shifted somehow from their original resting places but not by any modern excavations.

BROAD AND ROUND SKULLS OF THE MIDDLE LEVEL. ZONE II.

These are the prolific relic-bearing burials characterized by numerous clay pots, small triangular chert arrowpoints and objects

made of bone, copper, stone, and shell. I have taken EM 19 as the type, plate XXV, e, f, it being the first of its kind I found, also a male adult amid a horde of children and female adults. The skull, complete and undistorted, measures 173 mm long, 150 mm wide and 138 mm high; cephalic index 86.7, height-length index 80. The forehead is low and the rear of skull flattened around the lambda. The parietals bulge strongly outward, giving the skull exaggerated width, which is accentuated by the narrow frontal, 94 mm at temples. The lower jaw development is feeble at the rear. The angle is more obtuse and the lower line inclines downward more than in any specimens previously described. The vault of cranium is thick, but the specimen seems neither hard nor heavy. The nose is narrow, nasal index 46.7, and the lower margins are rounding. The face is not short, but the great bizygomatic breadth of 147 mm gives a low facial index, 84.3. The orbits are large with rounded corners, orbital index 87.9 denoting meso orbits. The lower cheek border at the junction of malar and upper maxillary is an unbroken line devoid of tubercle, a rare feature in the numerous other skulls of all types. The skull vault is keeled along the sagittal suture. All sutures are open. The teeth are large and considerably worn. Several molars of the lower jaw have been shed. A striking characteristic of this skull is the oblique position of the incisor teeth which are thick and inclined outward so strongly that the upper and lower ones do not effectively oppose each other, those above overlapping the ones below. The protruding teeth, the massive upper and the feeble lower jaw, all give a general effect of prognathism and receding chin. This effect is very noticeable in many of the Middle Level brachycephals from both big mounds. EM 2, 21, 80, 91, 126 and WM 32, 47, 66, 70 and 75 are good examples which contrast strongly with numerous other skulls from all levels, wherein the incisors articulate as perfectly as the other teeth and eventually wear down to the roots.

EM 2, a young female adult with clay pot, shell bead and copper plate ear discs, has the broadest skull found in the mounds. It is 160 mm wide, which with 175 mm length gives a cephalic index of 91.4. The nose is meso, the lower margins obscure. As in EM 19, the forehead slopes and the occipital region is flattened around the

lambda. The lower line of jaw inclines strongly downward to the chin and joins the ramus in a wide curve. EM 2 and EM 19 rested upon their occiputs and show no lateral distortion. EM 19 is light brown, EM 2 darker.

EM 80, an adolescent, probably a girl, is in fine condition. This skull, like its two predecessors, is flattened around the lambda. The lower nasal margins are guttered. The face is prognathic, gnathic index 105. The obtuse-angled jaw, with sloping lower border, and projecting incisors are very pronounced in this specimen. The color is light buff.

EM 69, a young adult which I have listed as a male, may be a female. The sutures are open; teeth worn but in good condition. The nasal index of 48.4 shows medium. The lower nasal borders are obscure. The lower jaws are more strongly developed than those of other broad-heads.

EM 71, a female adult, is much like EM 2. The cephalic index is 90.9. The nose is narrow, the lower margins obscure.

EM 72, also a female adult, has a cephalic index of 85.2. See plate XXVI, a, b. The lower nasal margins are sharp. The type EM 19 is almost without concavity of upper maxillary below the infra-orbital foramen. In EM 72 we find the other extreme, this region being very deeply concave.

WM 53, a prone female adult with elaborately ornamented "antler-point" pot, is the only Middle Level broad-head I have found in the Big West Mound. The cephalic index is 90.5. The nose is rather broad, the face long.

EM 91, a female adult, typifies a number of skulls whose only notable difference from the broad-heads lies in the lesser breadth, and indices ranging from 80 to less than 85 instead of over 85. These are prone burials with pots or artifacts lying beneath the Ash Layer. EM 91 skull measures 176 mm long, 143 mm wide and 141 mm high. The cephalic index is 81.2, the height-length index 80.1. The nasal opening is narrow with lower margins obscure. The upper maxillary like that of EM 19 is without concavity below the infra-orbital foramen. The sloping lower margin and obtuse angle of the lower jaw is in common with the broad-heads, a notable feature.

EM 94, a rather young female adult skull, 175 mm long and 140 mm wide, has a cephalic index of 80. The nose is meso, lower nasal margins obscure. The teeth are rather worn, otherwise in good condition. The face is long, facial index 96.4. The color of this specimen is light brown.

EM 96, a male adult skull with a cephalic index of 84.3, has complex convolutions in the coronal sutures. The nose is broad, the lower margins strongly guttered. The color of the specimen is buff.

ROUND SKULLS OF THE MIDDLE LEVEL. ZONE III

The members of this group are all small female adults. Judging from their limb bones, none of them were over 4 feet 10 inches tall. They were buried without relics in graves so small that the bodies had to be folded up and crammed in. These were burials in gravel, deeper than those of Zone II and their only distinction from Lower Level graves was that brown pebbly earth was used to fill in the graves making them very easy to find after digging down a foot below ground level to gravel.

WM 22 skull is hard and very heavy and appears more ancient than any other specimen in the mounds. (See plate XXVI, c, d and e.) Surrounding soil conditions, however, had more to do with the preservation of the various skulls than anything else. Of those embedded in gravel untouched by soil, the bone color and texture is much better preserved than others less ancient in contact with dirt. WM 22 was covered with about 12 inches of torpedo sand or very fine gravel with brown pebbly soil over that. The skull is only slightly crushed, with little distortion. All of the molar teeth have been shed, those remaining being much worn. The length of cranium is 170 mm, width 137 mm, height 133 mm; cephalic index 80.3, height-length index 78.4. The nose is narrow, nasal index 43.6, lower margins sharp. The orbits are low, rectangular, and horizontal. The left lower maxillary is diseased and sunken deeply below the infra-orbital foramen.

EM 30, the smallest adult skull in the collection, also represents the most aged individual. It measures only 164 mm long, 133 mm wide and 133 mm high. The cranial sutures are closed, the jaws almost toothless.



a



b



c



d



e



f

PLATE XXVI

a 3 EM 72 Broad-head female adult prone extended burial slightly in gravel with "antler-point" pot. Cephalic index about 85. This is from the same level as EM 19 and EM 2 where the great bulk of the relics were found. Zone II. 3 16+. b. EM 72. Female adult Broad-head, cephalic index, 85. With large pot slightly in gravel. Zone II. 3 16. c. WM 22. Round-head male adult. In gravel without artifacts. No particular position of skeleton. This skull is hard and heavy. Middle Level, Zone, II. 3/16. d. WM 22. Round-head male adult deep in gravel without artifacts. Middle Level, Zone III. 3 16-. e. WM 22 Round-head male adult. Middle Level, Zone III. 3 16+. f. EM 65. Male adult pygmy in gravel at base of Middle Level, Zone III. This is a Round-head without artifacts. Some of these Round-heads were deeper than Meso-heads like EM 44 but the graves can be traced higher but not as high as the Broad-heads EM 2-197-2. 3/16+. (See also Plate XXVII, a. c and d.)



a



b



c



d



e



f

PLATE XXVII

a. EM 65. Female Round-head from Zone III, Middle Level. Irregular burial without artifacts. 3/16. b. S 1. Meso-head from near lodge-pit. 3/16+. c. EM 65 Rear View. 3/16. d. EM 65. Female adult Round-head from Zone III of Middle Level. Note the small bone at the bregma. 3/16-. e. S 1. Young male adult Meso from near lodge-pit. I strongly believe that a bone arrowpoint nearby made the hole over the right eye. Note the small, narrow nose with sharp lower margin. 3/16+. f. 3 EM 42. Type Meso-head male adult. Irregular burial in gravel above Long-head EM 26. Zone I. 3/16-. (See also Plate XXVIII, a and b)

EM 65, a much younger adult, has a fine undistorted skull 170 mm long, 141 mm broad and 135 mm high. (See plate XXVI, f; plate XXVII, a, c and d.) This is a round, rather high head with narrow nose, meso face and large high orbits oblique and with round corners. A small separate bone lies in the sagittal suture near the bregma. Close to EM 65 was another individual of about the same size, EM 66. The skull was crushed and distorted beyond repair.

SKULLS FROM THE MIDDLE LEVEL. GENERAL.

Here are included all skulls that because of disturbed conditions or of their positions near the rims of the mounds, cannot be located with certainty by overlying strata. EM 82, a female adult round-head with cephalic index of 84.8, may belong to Zone III closely overlying a Lower Level burial. The skull is quite high, nose rather narrow, face long, orbits low. EM 28, a female adult, has a fine high round skull with narrow nose, long face and high orbits. Possibly this specimen belonged in Zone II. EM 43, an old female adult, was a crouching burial lying on the left side in gravel with disturbed conditions above. It has a long, high skull with meso nose, long face and low orbits. The feeble lower jaw development likens this specimen to the broad and round heads of Zone II. EM 46, also a female adult, with a cephalic index of 71.8, is very like EM 43. EM 109 a prime male adult from the rim of the Big East Mound, has a skull length of 181 mm, width 150 mm, cephalic index 82.8. This is a rugged specimen with all sutures open, color buff. The teeth are much worn, some shed, others decayed. An interesting feature of this specimen is the occipital bone which is divided by horizontal suture into two parts. The lower part has a deep circular depression, about 27 mm in diameter, placed centrally below and touching the dividing suture. The bone is not over 1 mm thick in the center of the depression. The nose is meso, the lower nasal borders obscure. The greatest width of lower jaws across the condyles is 140 mm which is equaled only by one other specimen EM 48, yet to be described.

From the Big West Mound are WM 49 male adult and WM 66 and WM 70 females, all round-heads. The two latter, both prone

burials have broad faces, broad noses and low orbits. They appeared to belong to Zone II, and WM 49 to Zone I. WM 5, a dilapidated female adult, is a very doubtful meso probably belonging in Zone I. The blade of a fine chisel-like stone celt was 1 inch in the nasal opening. This celt shows very plainly the scratches made when it was ground to shape. Skull S 1 from the border of a lodge-pit about 100 feet south of the Big West Mound is complete undistorted specimen of male adult 184 mm long, 142 mm wide, (See plate XXVII, b and e.) 138 mm high; cephalic and height-length indices 77 and 75.2 denoting a meso rather low head. The nose is small and narrow with all borders sharp, face long, orbits low.

MESOS OF THE LOWER LEVEL

EM 42, taken as the type, is a powerful young male adult. Like many others of its kind, the skull is not only crushed but twisted by diagonal compression so that measurements of the cranium are uncertain. The skull is very massive, the face equally so. (See plate XXVII, f; plate XXVIII, a and b.) The coronal and sagittal sutures are partly closed. Except that it is defined as a meso, the various indices show no marked distinctions from the long-heads to be described. This cranium measures doubtfully, restored, 182.5 mm long, 140 mm broad, 147 mm high. The teeth although much worn by abrasion upon each other, are all present and free from decay. The color of this specimen is buff and light brown.

EM 89 is a younger male adult, a massive specimen less distorted than EM 42. (See plate XXVIII, c, d, and e.) The color is buff, texture rather brittle like other Lower Level burials. Except for a decayed upper right canine, the teeth although worn are all present and in good condition. The nose is decidedly small and narrow for the massive features.

EM 48, an old male, is a very rugged skull, the largest I have found anywhere upon the Fisher site. In color it ranges from buff to brown. It is badly crushed laterally with some distortion. The restored cranial measurements are: length 190 mm, width 149 mm, height 148 mm. The nasion-opisthion arc length is 392 mm. The nose is small and narrow.



a



d



b



e



c



f

PLATE XXVIII

a. EM 42. Type Meso-head, male adult. Lower Level, Zone I. Large twisted skull. This is typical of a group of skeletons, the largest in the Big East Mound, all lying upon their sides, without pots or artifacts. 3/16+. b. EM 42. Type Meso-head, male adult. Irregular burial. This is one of the large twisted skulls found buried deeply in gravel. Zone I, Lower Level. 3/16+. c. EM 89. Male adult Meso. Lower Level, Zone I. 3/16. d. EM 89. Male adult Meso. Lower Level, Zone I. 3/16. e. Male adult Meso. Lower Level, Zone I. 3/16. f. EM 26. Type Long-head, Zone II of Lower Level with problematical flints. 3/16. (See also Plate XXIX, a, b and c.)



a



b



c



d



e



f

PLATE XXIX

a. EM 26. 3/16. b. EM 26. Type Male adult Long-head. Lower Level, Zone I. 3/16. c. EM 26 Type Long-head. Lower Level, Zone II. 3/16. d. EM 98. 3/16. e. EM 98. f. EM 98. Top view of Long-head (deep in gravel). (All figures are about 3/16 size.)

LONG-HEADS OF THE LOWER LEVEL. ZONE II

EM 26, the type, is an old individual, probably a male. (See plate XXVIII, f; plate XXIX, a, b and c.) The skull is thick-walled, heavy and brittle; condition good although slightly compressed laterally. In color it is a creamy yellow. The lower jaw is harder than the skull and seems too wide for it, although the two were found close together. The restored measurements of the cranium give 187 mm length, 138 mm width, cephalic index 73.8. The nasal opening has sharp borders, nasal bones long, nose prominently arched. The nasal index of 49 shows medium length and breadth. The facial index not allowing for tooth-wear is 85.2 or medium, the face being narrower with less prominent cheeks than the majority of the skulls. The features in common with all long-heads and mesos of the Lower Level are decidedly non-prognathic. The orbital index is 80.6 or low, the orbits being wide for the height. The width of frontal bone at temples, the narrowest part, is 97 mm, the greatest width 112.7 mm, a difference of 15.7 mm. The forehead is low and sloping. Like the other long-heads and mesos, the occipital posterior development is the main contributing factor in the skull's length, its basal part being rugged and with broad surfaces for neck muscle attachment. The lower jaw ramus is broad and long, the angle less obtuse than ordinary, which with the occipital development indicates powerful neck and jaw mechanism.

EM 98, an old male with sagittal suture almost closed, is the same type as EM 26, judging from the indices, although the nose is narrow, nasal index 46.7. (See plate XXIX, d, e and f.) The face is broader and longer, standing forth prominently at the cheeks. This skull is crushed on its left side. The teeth are badly worn and decayed and all molars are shed except one in the upper jaw.

EM 41 is a rather old adult indicated by closing in of part of the sagittal suture. (See plate XXX, a and b.) It appears to be a male and yet an infant accompanied it. The skull actually measures 192 mm long and 134.5 mm wide but is compressed laterally, and my restored measurements are 187 mm and 138 mm respectively, giving a cephalic index of 73.8. The nasal opening

widens strongly in its lower third to 30 mm, the length being 53 mm, nasal index 56.6. The nose is broad at the nostrils although narrow above. The lower nasal border is obscure although not guttered. This is a rugged specimen with massive jaws, teeth much worn some of the molars shed. The forehead slopes strongly as in others of its kind and the superorbital ridges are prominent. These ridges extend about half way outward above the orbits in common with all other skulls from the Fisher site.

EM 81, a much crushed male adult, agrees in general with the type EM 26. The teeth are considerably worn, otherwise in good condition except that the molars of the lower jaw have been shed. The skull is of medium size, 185 mm long, 133 mm wide, cephalic index 71.8. Around the left infra-orbital foramen, it shows signs of disease. All of the cranial sutures are wide open.

From the Big West Mound, I have secured only two specimens. EM 76, a young female adult with infant, is finely preserved and not distorted, although crushed on the left side. (See plate XXX, c, d and e.) In its various indices, it agrees with EM 26. The length of skull is 187 mm, the width 133 mm, cephalic index 71.1. The nasal openings are long, all borders sharp. The jaw angle is about 90 degrees. The teeth, although worn, are all present and in good condition.

WM 42 is a young male adult with the same length and width of skull as WM 76. Although much worn, the teeth are all present and in good condition and, like all of the type, the incisors wear upon each as much or more than the other teeth. The nose is small and slender contrasted with the rather massive face.

SW 1 is the only true long-head found outside of the two big mounds. It lay in one of the smaller mounds at -48" concealed in gravel but I could secure only the cranium and a few limb bones. It represents an old male and is the longest specimen I have found; length 193.7 mm, width 140 mm, height 149 mm which make the cephalic index 72.3 and height-length index 76.9.

SKULLS FROM THE LOWER LEVEL. GENERAL.

EM 44 is a fine young adult which I interpret as a female. (See plate XXX, f) All cranial sutures are open and the teeth

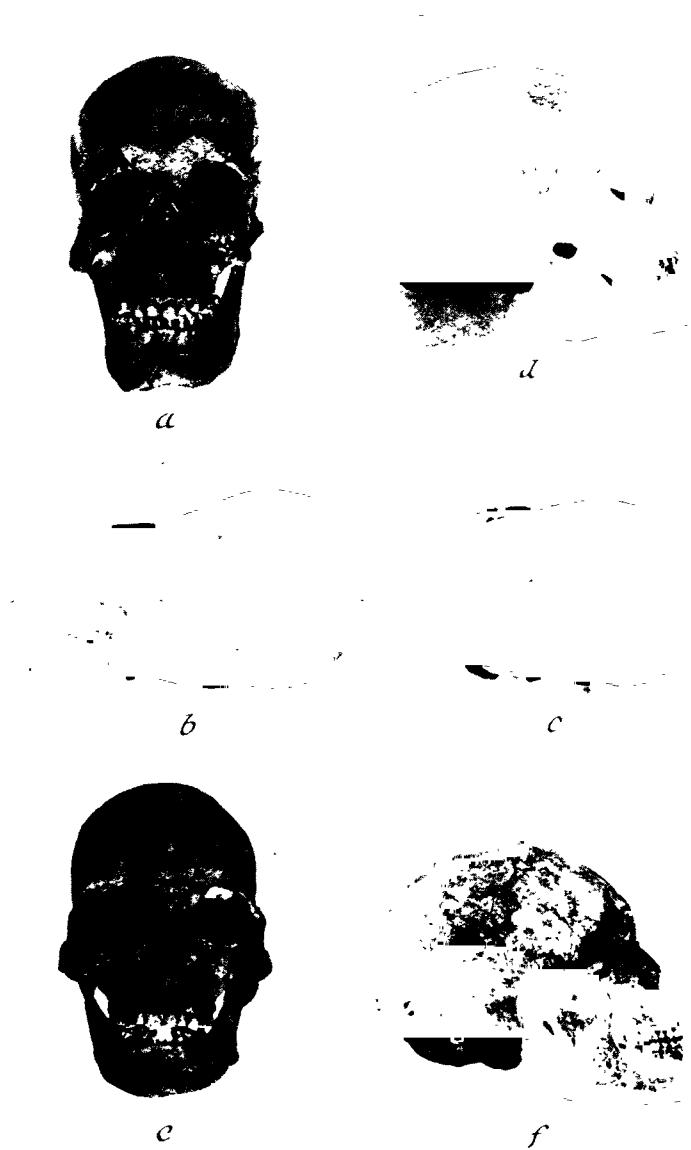


PLATE XXX

a. 3 EM 41. Concealed deep gravel burial flattened on left side. Forearm broken -- pierced by bone arrowpoint? This skeleton was directly beneath 3 EM 39. Middle Level, burial with pot. Directly above EM 39 was EM 37. 2 5+. b. EM 41. Long-head. Crushed on left side. 3/16+. c. WM 76. Female Long-head adult from Zone II, Lower Level. 3/16. d. WM 76. Female adult Long-head. Zone II of Lower Level. Concealed pebbles under the head. 3/16. e. WM 76. 3/16. f. EM 44. One of a group of Meso and Long-heads from center of Big East Mound above the type Long-head, EM 26. 3, 16+.



PLATE XXXI

Diseased or Damaged Human Bones Left Right humerus of the type Broad-head EM 19, showing a diseased head. Broken and healed radius of long-head EM 41. The ulna seems to have been pierced by a round pointed object. Lower end of humerus from Gravel Pit, rear view showing wound. Pierced sternum EM 90. Broken and healed tibia shaft from Gravel Pit.

are in good condition. This skull resembles the Long-head WM 76 and yet the nasion-opisthion arc length is only 352 mm. The chin however is far less prominent than in any specimen previously described.

EM 108, being an old individual, does not superficially resemble the type meso or others described, due to alveolar absorption. Most of the teeth are shed and the lower face and jaws have lost their massiveness. Although crushed when found, the restored skull is undistorted and in good condition for measurement. It is that of a male, 182 mm long, 142 mm wide and 145 mm high; cephalic index 77.9, height-length index 79.6. The nose is narrow with obscure lower margins; nasal index 45.6.

EM 57, a powerful young male adult, agrees in general with EM 26, except that the lower nasal borders are somewhat guttered. All teeth are in excellent condition. The two upper incisors are massive and shovel-shaped, the cutting edges depressed between the inner and outer layers of enamel. This skull is badly crushed from resting in gravel upon its left side, where the color is light brown, a darker brown on the other. The nasion-opisthion length measured along the curve is 377 mm, greater than EM 26 or EM 98, which are 369 mm and 366 mm respectively.

WM 61 an adult meso apparently a male, in a semi-concealed grave, lay under the periphery of the Big West Mound where no basal seam was visible beneath the Ash Layer, and may belong to the Middle Level.

WM 46, an old female adult, is another rim burial which may be assigned to Zone I of the Lower Level on the sole evidence that it lay in a semi-concealed grave upon its side without pot or artifacts. The skull measurements, which are doubtful, give a cephalic index of 77.5, height-length 73 and nasal 54.

NOTES ON THE LIMB BONES

Curvature of shaft occurs in all limb-bones excepting the humerus. In the femur it is common, often exaggerated antero-posteriorly; lateral and rare in the tibia and fibula; lateral and more common in the radius and ulna. (See plate XXXI.)

Measurements of the various limb bones denote statures rang-

ing from 1744 mm (5 ft 8 $\frac{3}{4}$ in.) to less than 1500 mm (4 ft 10 in.), EM 45 being the tallest and EM 65 the shortest. WM 38 and NGP 2 of the Upper Level were rather short and yet their limb bones denote muscular strength not exceeded by any of the others, although EM 57 and EM 48 of the Lower Level were both powerful males. The Middle Level was full of small and rather feeble individuals.

The middle section of the sternum is pierced with a round 7 mm hole in two cases EM 90 and WM 35. Both are mesos taken from semi-concealed graves of the Lower Level.

Skeletal parts display various healed injuries. The type broad-head EM 19 has a bad right humerus, most of the head having disappeared and this bone is considerably shorter than the left. WM 75, a round-head, has a similar affliction. The head is much flattened and the shaft is bent sharply outward at the deltoid prominence. In the old long-head EM 98, the axis and third cervical vertebra are fused together and the atlas is distorted. EM 94, a female round-head, had a crippled ankle shown at the lower end of one tibia and the corresponding surface of its astragalus. One ulna of EM 41, long head, was broken through the center by a pointed object which also smashed the radius, both bones eventually healing although much misplaced. WM 15, a round-head, had one ulna broken and healed in the center of shaft. The radius of WM 35 was fractured, then healed near the wrist. Several tibiae show severe healed breaks. Others bear marks of healed wounds or disease. In adolescents the teeth are in good condition becoming worn down with advancing age when decay or extreme wear results in loss of teeth, the molars disappearing first. Abscess and disease frequently involving the jaw-bones appear in older individuals.

SUMMARY OF OBSERVATIONS ON THE FISHER MOUNDS

The following summary is not presented as a statement of conclusions but as a working basis for further study. Stratigraphically considered, the two big mounds appear divisible into layers or levels each consisting of several zones as evidenced by the human burials and relics with particular attention to each



PLATE XXXII

July, 1926, Excavation at south rim of Big East Mound. George Langford exposing the double burial EM 115-116, a male and female of Middle Level with stone, bone and shell artifacts. The ground level is at "A," gravel begins at "B."

grave's plane of origin, measurements of skulls and burial postures.

Upper Level, Zone 1. This is a post-European culture represented near the surface of the two big mounds by trade silver and glass and kaolin beads. In the small Southeast mound aboriginal pieces of bone, copper, shell, and flint accompanied glass beads, silver ornaments, and other European objects. The skeletal evidence is scanty but the skulls, statures and burial postures are probably much the same as in the zone below.

Upper Level, Zone 2. There were no European objects; only notched or stemmed flint or chert arrowpoints, and possibly a few small crude clay pots. The few skeletons ascribed with reasonable certainty to this zone are of moderate stature with short or round high heads, broad noses, short faces and low orbits. No ashes overlay the skeletons which were in various postures upon the back or side facing in no particular direction. WM 38, a male adult, is the type. WS 2, a young adult female, and NGP 2 from the outlying small mounds and "lodge-pits" are additional examples.

Middle Level, Zone 1. The culture is represented by polished bone artifacts, small triangular chert arrowpoints, copper celts, chisel-like stone celts and clay pots crudely made with little or no ornamentation. Here was a varied assemblage of skeletons of from moderate to good stature with all shapes of heads; long, meso and short; broad and meso noses, long and meso faces and low and meso orbits. There were no ashes but head and shoulders were occasionally covered with large gravel. Most of the burials occurred at the rim of each large mound although a few were to be found nearer the center and such graves were dug deeply. The burial postures varied as in the level above, although more or less extended upon the back or side. WM 57, 15, and 25 are good examples. These are male adults with short high heads, broad to meso noses, long to meso faces and low orbits. WM 7 and 32 are female adult mesos. EM 100, a young female adult, with long high head, narrow nose, long face and high orbits, was studiously arranged in a crouching posture with an infant beside her. EM 115, 116 and WM 49, round-heads, were accompanied by caches of small triangular chert arrowpoints and polished bone implements.

Middle Level, Zone 2. This section wherein the graves were below ground level, contained the great bulk of human skeletons, clay pots and artifacts, the latter consisting of crude bone, copper polished stone, chert and shell objects. The shell pieces were spoons, pendants and tube beads carved from clam-shells. Small triangular and long slender arrowpoints together with a few leaf-shaped blades comprise the chert pieces. Polished stone artifacts were represented by a few small celts. The clay pots are small to large with bark-like, sometimes smooth surfaces undecorated or covered with "antler-point" designs. The skeletons, mostly female adults and young, are of modest stature and physical development, with short high heads, some of which are comparatively broad, with broad noses, long faces and meso to low orbits. The graves were frequently overlain by beds of ashes mixed with dirt, charcoal, clam-shells and splintered animal bones. The great majority of adults lay upon their backs extended, heads west, feet east. EM 19, a male adult broad-head with rather narrow nose, is the type. EM 21, 39, 71, 72, 80, 94 and 96 are other examples.

Middle Level, Zone 2. Burials in this zone were without post or artifacts. The skeletons are of small stature, with round high heads, narrow noses, long faces and high to low orbits. No ash-beds or debris covered the skeletons, which lay sprawling in various directions. WM 22 is the type, with EM 28, 30, 65 and 66, other examples.

Lower Level, Zone 1. No pots or artifacts of any kind occurred here, nor were there any ashes or debris around the skeletons, the latter lying in pure gravel with only slight discoloration or change in texture above to betray the graves beneath. The skeletons show good stature and physical development, with meso high heads, narrow noses, long faces and meso orbits. These were irregularly crouching burials usually upon the left side with face half up or down, knees and legs not laid close together and faces looking north. There are 4 certain and 8 slightly uncertain cases, the majority male adults, one of which, WM 46, is broad-nosed. EM 42, male adult, is the type. EM 48, 89 and 108 are other good examples.

Lower Level, Zone 2. The culture is scanty; two small pen-

dants with WM 76 and one tube with EM 98 made from marine gastropod shells, and four doubtful flints with EM 26. The skeletons are medium in stature and physical development with long high heads, narrow to meso noses, long faces and meso to low orbits. EM 41 is broad-nosed. Traces of ashes appeared above the head of a female adult, WM 76. EM 41 and WM 76 were accompanied by infants. Of 7 adults surely in this zone and 2 slightly uncertain, all were crouching burials studiously arranged with knees and legs together, faces looking north. 8 lay upon the left side, 1 upon the right.

THE FISHER SITE CORRELATED WITH A NEIGHBORING LOCALITY

In the September 1919 issue of *THE AMERICAN ANTHROPOLOGIST*, I described "The Kankakee Refuse Heap", a sharply restricted pre-European camp site on the Kankakee River about $1\frac{1}{2}$ miles above where it empties into the Illinois. The locality unlike others in this region, abounds in small triangular chert arrowpoints and rejects, utilized bone and antler, rude hammerstones, grooved sandstone pieces, broken shells, burned animal bones and potsherds tempered with both shell and grit. Many of the latter bear "antler-point" decoration. Recently I have found two inconspicuous burial mounds upon the site but the human bones buried in clay are too poorly preserved for a study of their characteristics, except that they were of small people.

My article referred to the locality as one unique in this region, mainly because of the great abundance of small triangular and, slender chert arrowpoints together with the rejects and refuse of their manufacture. It also contains shell spoons, polished bone cylinders, edged hammerstones, grooved sandstones, polished antler points cut or bored, hollowed-out deer and elk phalanges, and bone pins. These and the potsherds, also the animal bones, agree with those from the Fisher site. Clay deposits exposed on the Kankakee River Banks offered abundant material for the manufacture of pottery. The culture of the surrounding country is characterized by notched and stemmed arrowpoints made from flint, chalcedony and other stone, and some of these appearing among the "Refuse-heap" relics may be correlated with the Upper

Level of the Fisher site. Not one piece of punch-stamped or rouletted ware has appeared among the numerous "Refuse-heap" potsherds. These facts, together with other evidence, go to show that the "Kankakee River Refuse Heap" and Fisher Middle Level are the same and preceded the prevailing and better-known culture of this region.

MC KENNA PROCESS COMPANY,
JOLIET, ILLINOIS.

ADDENDUM

Since the main body of this article was written, work has continued almost to completion on the two big mounds, resulting in the discovery of 15 more human burials and several clay pots. WM 87 a young female adult lay at $-48''$ in a concealed grave with three doubtfully worked flints beneath her head. This was a crouching burial on the left side, head west, feet east. Directly above it was another skeleton at $-12''$. WM 87 has a cephalic index of 68.3, length height 76.1, nasal 60, facial 95.2, orbital 88. These denote a long, high skull with unusually broad nose. The face is rather small. In this same excavation, a small female adult at $+18''$ lying on another at $+12''$, both with heads west, feet east. The former WM 84 lay upon the left side. She wore a necklace of small shell beads which crumbled to powder when exposed. Near the head was a small pot containing a clam-shell spoon. The pot is grit-tempered, smooth-surfaced and without decoration of any kind. Previously I had found sherds of similar pots in the Upper Level diggings but no whole ones. The two skeletons were directly over a small child's skeleton, the latter at $-30''$ without relics. These were all near the east rim of the Big West Mound.

More might be said of certain burials—some previously described—which presented peculiar features. Several originating near the Black Seam may be intrusives.

In Zone I Middle Level or Upper Level, I found graves in "previously disturbed areas." Some of these areas were disturbed by burrowing animals and modern excavations but others seem to have been dug into by the aborigines themselves. EM 101 and 102 were dug graves traceable upward almost to the Black Seam. EM 83 and EM 100 lying in the Ash Layer showed no graves dug for them, the side wall sections presenting no clue except to suggest

LEVEL	SPECIMEN NUMBER	AGE & SEX	+ ABOVE OR - BELOW GROUND LEVEL IN INCHES	C R A N I U M										F R O N T A L B O N E					F A C E					N O S E		O R B I T S		U. J A W		L. J A W		H E A D			I N D I C E S				
				GREATEST LENGTH	GREATEST WIDTH	BASION-BREGMA HEIGHT	BREGMA-EAR HOLE HEIGHT	NASION-OPISTHION ARC LENGTH	NASION-BREGMA ARC LENGTH	NASION-BREGMA STRAIGHT LENGTH	NASION-BREGMA CURVA-TURE	WIDTH AT TEMPLES	WIDTH AT MALAR PROCESS	WIDTH AT CORONAL SUTURE	BIZYGOMATIC WIDTH	NASION-MENTON LENGTH	INCISOR TOOTH WEAR	NASION-ALEV PT. LENGTH	BASION-NASION LENGTH	BASION-ALEV PT. LENGTH	LENGTH	WIDTH	WIDTH	HEIGHT	ALEVOLAR LENGTH	ALEVOLAR WIDTH	WIDTH ACROSS CONDYLES	WIDTH-LENGTH	HEIGHT-LENGTH	NASAL	FACIAL WITH L. JAW - ACTUAL	FACIAL WITH L. JAW & TOOTH WEAR	FACIAL WITHOUT L. JAW	ORBITAL	GNATHIC				
UPPER	WM 38	Male adult	+12	176	141	136	114	365	127	115	23.8	92	104	116	145	116	6.4	71	98	98	52.4	28.6	38	31.7	57.5	67	121	80.1	77.2	54.5	80	84.4	49	83.1	100				
	WS 2	Young female adult	+18	168	140	132	108	342	117	103	23.8	92	98	113	132	106	0	60	104	97	46.2	23.8	37	31.9	53	61.1	122	83.1	78.5	51.5	80.3	80.3	45.4	86.2	93.2				
	NGP 2	Old female adult	0	174	140	133	114	356	127	119	22.5	87	111	116	148	119	3.2	70	108	98	55	28.5	39.7	34.9	57	64	112.7	80.5	76.8	51.8	80.6	82.5	47.3	87.9	91.1				
M I D D L E	WM 25	Male adult	+18	172	140	143		362	127			100	114	121	143	122		70	110	110	54	28	42.9	31.7		66.7	117.5	81.4	83.1	51.8	85.4		48.9	73.8	100				
	26	Female adult	+18	179	141	146		362	124			101	110	118	145	138		67	101	94	47.6	25.4	41.3	34.9			117.5	78.7	81.4	53.3	95.5		46.2	84.5	93				
	45	Young	+12	174	146			363	127			90.5	95	114	113		57				39.5	22.5	36.5	31.7	44.5	57.2		83.9		56.9			50.4	86.8					
	47	Female adult	+12	169	138	136	115		132	116	27	92	100	108	132	114	0	68.3	101.5	92	52.4	25.4	38.5	33.5	52.4	66.7	118	81.6	80.4	48.4	86	3	86.3	51.7	87	90	6		
	51	Male adult	+12	173	139				130			102	111	116		116	6.4	68.3			52.4	27.5	41.3	35	56	66.7		80.3		52.4				84.7					
	EM 37	Male adult	+18	173	149	145	116	364	130	119	22	101	113	126	152		75	110	100	54.5	27	42.9	40	54	60		86.1	83.8	49.5				49.3	93.2	90	9			
	38	Female adult	+18	176	143		119		127	112.7	25.4	95	103	116	130		65			44	25.2	38	33	54	62		81.2		50.7				50	86.8					
	69	Male adult	+12	173	149	138		356	114			90	98	116	135	116	65	103	102	52.4	25.4	39.6	34.5	54	69	120	86.1	80	48.4	85.9		48.1	87.1	99					
	83	Female adult	+6	178	139	147		378	133	99		105	122	132	124		74.5			52	29	41	35	58	66.7		77.5	83.7	55.7	93		56.4	85.3						
	100	Young female adult	+12	174	124	135		362	122			86	99	111	128	127		72				36.5	35	51	62	120	71.2	75.8	47	99.2		56.2	95.8						
	101	Male adult	+9	182	137	143	118	380	130	120.7	25.4	95	105	112	135	124	0	67			52.4	25.4	41.5	33.3			124	75.2	78.5	48.4	91.8	91.8	50	80.2					
	102	Male adult	0	185	139	137		374	127			95	109	114	143												128.5	75.1	74										
	2	Female adult	+18	175	160	138			121			100	110	121	143	121			100	95	54	27	42.9	36.5	66.3	129	91.4	78.9	50	84.6			85	95	2				
	19	Male adult	+18	173	150	138	117.5	346	121	113	20.6	94	107	119	147	124	0	76	100	99	56.3	26.3	41.5	36.5	56	70	136	86.7	80	46.7	84.3	84.3	51.7	87.9	99				
	21	Young	0	167	132							86	95	110	118	112		68	97	105	49.5	25.3	38.1	31.7		64	104	79		51.1	94.9		57.6	83	2	108			
	39	Female adult	+12	172	138	134	115	349	117.5	119.5	22.2	95	103	112	125	116	7.9	64	105	97	49.2	25.1	38.1	33.3		60	111	80.2	77.8	51	92.8		43.2	88.7	92.3				
	71	Female adult	+15	165	150	130		340	121			89	102	114	135	108		64	102	100	47.6	22.2	38.2		52.4	62	119	90.9	78.7	46.6	80		48.1		98				
	72	Female adult	+18	170	145	141	119	356	121	111	23.8	89	106	120	133	124	0	70	92	87	56	27.5	41.3	35	53	65	122	85.2	82.9	51.8	93.2	93.2	52.6	84.7	94.5				
	80	Young	+24	152	138	137		346	114			91	102	113	130	122		69.5	90	95	57	25.5	41.3	33.6	54	68	117	90.7	83.6	53.1	89.7		53.4	81.3	105				
	91	Female adult	0	176	143	141	112.7	352	121	109.5	23	95	106	117		127	0	69.8			55.6	25	39.7	36.5		69	121	81.2	80.1										
	94	Female adult	+30	175	140	134	111	348	114	104	19	92	105	117	134	122	3.2	70			52	26	38	33.3	54	63	125	80	76.2	50	91.4	93.4	52.2	87.6					
	95	Young	+36	172	146	132		355	130					113				97										84.8	76.7										
	96	Male adult	+36	175.5	146	149		365	127			92	101	118	132	127		76	109	107	47.6	28	36.5	31.7	54	67	127	84.3	80.1	58.8	96.2		57.5	86.8	98.1				
	WM 24	Aged female	+12	168	135				111			91	101	116	103		62				49.2	26.4	40.2	33.1		62	114.3	80		53.6			82.3						
	40	Female adult	+30	176	141	145		370	132			90.5	101.5	116	130	114		68	95	91	50.8	25	39.7	32			125	80.1	82.3	49.2	87.6		52.3	80	6	95.7			
	53	Female adult	+12	159	144			330	121			91	108	117.5	129	117		70			50.8	25.4	39.7	35	47.5	63	127	90.5		50	90.6		54.2	88	1				
	EM 30	Aged female	+26	164	133	133	106	336	114	103	22	87	98	106	127			17.0	65	100	100	49.2	23.8	38.1	31.7			119	81	81	48.3	90		51.1	83.4	100			
	65	Female adult	+36	170	141	135	106	345	117.5	105	22	91	105	114	138	119	0	70	101		54	25.4	39.7	37.8		64	124	82.9	79.4	47	86.2	86.2	50.7	95	2				
	WM 22	Old male	+40	170	137	133	108	343	122	109.5	21	97	105	105	132	114	7.9	68	110	102	52.7	23	41.3	34			112.7	80.3	78.4	43.6	87.2	92.3	51.5	82.1	92	7			
LOWER	EM 42	Male adult	+30	182.5	140	147	116	352	133	122	27	105	119	122	145	124	6.4	70	130	122	56	25.4	43	36.5	56	63.5	130	76.7	80.5	45.3	85.5	90	48.2	84.8	94				
	48	Male adult	+24	190	149	148	124	392	133	125	29	100	113	122	140	125	11.1	77.8			55.6	25	41.3	36.5			140	78.4	77.6	45	89.2	98	54.1	88.3					
	89	Male adult	+36	181	142	144	121	376	134	119	23.5	99	110	121	145	131.8	0	77.5			54	25.5	43	36.5	60	70	124	78	83.1	46.7	91	91	53.4	84.8	98				
	108	Old male	+36	182	142	145	117.5	365	130	121																													

LEVEL

MIDDLE & UPPER

MIDDLE

LOWER & MIDDLE

SPECIMEN NUMBER	AGE & SEX	+ ABOVE OR - BELOW GROUND LEVEL IN INCHES	GREATEST LENGTH	GREATEST WIDTH	BASION-BREGMA HEIGHT	BREGMA-EAR HOLE HEIGHT	NASION-OPISTHION ARC LENGTH	NASION-BREGMA ARC LENGTH	NASION-BREGMA STRAIGHT LENGTH	NASION-BREGMA CURVA- TURE	WIDTH AT TEMPLES	WIDTH AT MALAR PROCESS	WIDTH AT CORONAL PROCESS	BIZYGOMATIC WIDTH	NASION-MENTON LENGTH	INCISOR TOOTH WEAR	NASION-ALEV. PT. LENGTH	BASION-NASION LENGTH	BASION-ALEV. PT. LENGTH	NOSE		ORBITS		U. JAW	L. JAW	WIDTH ACROSS CONDYLES	WIDTH-LENGTH	HEIGHT-LENGTH	NASAL	FACIAL WITH L. JAW-- ACTUAL	FACIAL WITH L. JAW & TOOTH WEAR	FACIAL WITHOUT L. JAW	ORBITAL	GNATHIC			
																				LENGTH	WIDTH	WIDTH	HEIGHT												HEAD	INDICES	
			CRANIUM					FRONTAL BONE					FACE					NOSE		ORBITS																	
M 78	Old male	+12	176	138	137		346	119			91	102	114	130	122					57	25.5	41	33.3		133		78.4	77.8	44.7	93.8			81.2				
126	Young	-18	177	147				121			96	103	118	122			60			44.5	24	38	33.3	54	66.7	117	83		53.9	81.1		49.1	86.4	113			
131	Female adult	-18	175	140	133		359	110			87	102	110	127	111	3.2	70	102	89	50.8	23	38.1	36.5	54	63		80	76	45.2		55.1	95.8	87	2			
M 4	Male adult	+12	168	150		119		134	117.5	28.6	102	114	128	146		3				55	27	42.9	38.1	54	66.7	105	88.7	83.9	49.1	82.6	84.9	48	88.8				
7	Female adult	+24	184	143	143		356	120			91	102	111	124				110	90	48.2	26.5	37.7	33	54	68.3		77.5	77.6	49.7	87.4		52.4	87.5				
15	Male adult	0	184	147	143	117	5	372	127	115	23.5	97	111	119	150	11.1		117	115	52.4	26.2	42.6	33.3		76	133.4	80	77.7	50	80.6	86.7	44.6	78	97.8			
16	Old female	+18	181	143	133						91	100								49.2	26.5	39.7	33.3		114		75.2		53.8			83.8					
27	Old female	+12	173	130							91	102			102					49.2	26.5	39.7	33.3		114		75.2		53.8			83.8					
32	Female adult	+6	167	131	5	133	120	311	114	106	22	93.7	105	105.5	132	111	0	67	96	98	45	30.2	38	31.7	55.5	63.5	123	78.7	79.6	67.1	84	84	50.7	83.4	102		
39	Old male	0	181	139	146			375	127			95	105	112	142			71	101	89	51	25.4	36.8	35		127	76.8	80.6	49.8			50	95.8				
57	Male adult	+12	178	147	137	115	9	358	128	120	19.5	95	111	117	143		4.8		105	101	54	26	39.7	37	57	66.5	134	82.5	77	48.1	86	89.3	51	80.6	96.1		
67	Old male	0	180	143	141	117	5	352	127	114	24	103	113	117	144.5		7.9	69	114	105	53	27	42	37.5	60	68.5	133	79.4	78.3	50.9	77.9	83.4	47.7	89.2	92.1		
P 1	Old male	0	184	149	146			375	127			95	106	118														81	79.3				53.6	100	5	99	2
3	Female adult	-	175	137	143	122		367	128.5	114	25.4	92	103	117	127			68	103	102	50.8	24.6	34.1	33.9	54.5	65.6		78.3	82	48	4						
WM 5	Female adult	-9	173	132			124				87	95	111		102			54			39.7					104.8	76.3					44.6	78	97.8			
14	Young	-3	167	138	137								133	102						44.4	22.3	40	33				82.8	81.8	50								
49	Male adult	-12	175	146	140		346	127			92	108	114	139	119		70	108	100	52.4	27.5	42	35	50.8	66.7	127	83.4	80	52.4	85.6		50.3	83.3	92.6			
66	Female adult	-12	171	141	132	111	343	114	105	22	92	105	115	136.5	108	0	62	101.5	103	44	27	39.7	33.5	53	66.7	118	82.4	77.1	61.3	79.1	79.1	45.4	84.3	101.4			
70	Female adult	+30	174	144	138	114	354	124	112.5	23.5	97	105	121	133	113	0	66.7			49.2	27.8	39.7	31.5	50.8	65		82.7	79.3	56.5	85	85	50.1	79.3				
75	Young	-18	168	145	139		350	115			100	108	114	132	115		68	103	95	50.8	25.4	42	31	52	64	121	86.3	82.7	50	87.1		51.5		92.2			
1	Male adult	-24	184	142	138	109.5	356	121	117.5	23.8	105	113	124	138	126	0	70	106	97	55.6	23.8	42	33.3	57	71.4	127	77	75.2	42.8	90.9	90.9	50.7	79.2	91			
1	Male adult	-36	181	135	143		371	131			95	105		127	130		76			55.6	27	39.7	33.3		128	74.5	79	48.5	102			83.8					
W 1	Young	-18	164	132	137		337	124			92	99	116	118	114		68	100		87	53		38.1	36.5	71.4	117.5	80.7	83.5		97.2		53.6	95.8	87			
M 28	Female adult	-6	163	135	136	114	340	114	103	20.6	87	98	109	130	115	4.8	70	101	98	51	22	37	36.5	52	60	130	82.8	83.4	43.1	88.4	92.1	53.8	98.1	97			
43	Old female	-24	181	129	110	111	357	124	120	22.5	97	108	110	127	115	4	69	105	102	48.4	24.6	39.7	33.3	52.4	61	124	71.2	77.3	50.8	90.5	93.6	54.3	83.8	97.1			
46	Female adult	-36	181	130	141		343				94	108																71.8	77.9								
73	Male adult	+6	176	140				124			92	106	116	140				119		57	26.2	39.7	33.1	54	64		79.5		45.8				83.3				
75	Male adult	-24	181	148							98			140							27							81.7									
82	Female adult	-36	165	140	137		343				92	108		127	119				98	57	27	43	35				84.8	83	47.3	93.7			81.3				
109	Male adult	-18	181	150	149	120	380	130	117.5	22.5	101	109	125	143	127	3	69.8	113	106	52.4	27	43.6	31.7	62	76	140	82.8	82.3	51.5		90.8	48.8	72.7	93.8			
110	Male adult	-9	188	146	143		365	127			98	110	119	144												124	77.6	76									
111	Female adult	-36	181	150	143		368	130			102	108	125	130	122	0	71.5	111	112	50	23.8	42	36.5	57	68.3	130	82.8	79	47.6	93.8	93.8	55	87	101			
115	Female adult	-36	175	149			125				98	110	124																85.1								
125	Female adult	-18	161	133	124		341	119			92	102	113	122	111	0	65	93.7	95	51	23	38.5	33.3		63.5	120	82.6	77	45	90.9	90.9	53.2	86.4	101.3			
WM 44	Female adult	-24	179	135	145		359	124			94	111	113	133	119		68	118	108	54	25	42	34.5	56	63.5	119	75.4	81	47	89.4		51.1	94.5	91.6			
45	Male adult	-30	176	137	144		362	133			95	111	120		117	4.7	66.7			50.5	23	41.3	31.7		133		77.8	81.8	45.5				76.7				
57	Male adult	-24	185.5	136.5	145		377	133			95	105	114	140	123.8		68.3	116	106	54	25.4	42.5	35	58	66.7	132	73	78	47	88.4		48.8	82.3	91.3			
74	Male adult	-24	178	134			368	119			92	102	114	143	117		64			49.2	25	39.7	34.9	50	68.3	121	75.2		50.8	82		55.5	87.9				
103	Female adult	-36	175	132	148	122	365	122	111	24	91	105	111	135	114	3.2	66.7	106	103	48	25	38.1	33.3		117.5		75.4	84.5	52	84.4	86.8	49.4	87.4	97.1			
113	Female adult	-24	185	138	140		368	121			91	104	118	132	124	2	75	108	105	54	27	40	35	54	65	125	74.6	7									

that the bodies had simply been laid down and covered with earth and stones taken from the gravel. The double burial EM 115-116 was of this type. EM 117 which had disturbed it showed a dug grave up to near the Black Seam. In the Big West Mound, WM 49 and 25 appeared to have been laid down upon the Ash Layer with dirt and stones heaped over them. WM 38 and WM 67 were in graves dug through the Black Seam. The element of speculation in this discussion increases when we move outward from EM 83, 100, 101, 102 and WM 67 to the rim burials EM 115, 116, WM 49, etc., where marks of stratification were absent or uncertain.

My helper, Albert Tennik, and I are now engaged in exploring the "lodge-pits" encircling the mounds and it was my intention to refer briefly in this addendum to such facts as might be disclosed, showing what relationship if any the pits might have to the mounds. However, it now appears that the pits contain too much of interest to be so summarily disposed of and further account of them is deferred. Our preliminary examinations indicate that the pits were dwellings. They abound with camp refuse. As there are 43 ranging from 20 to 40 feet in diameter the field for exploration is a wide one. Relics thus far unearthed are all pre-European.

SKULL MEASUREMENTS AND BONE MEASUREMENTS

Skulls

Measurements are in millimeters.

Where measurements have one dash under them (—) this means that the specimens because of distortion may not be absolutely accurate. Two dashes (=) signify more doubt and three dashes (≡) considerable doubt although all of the figures may be safely used to determine types.

All skulls are not sufficiently mended to get all measurements, and there are 15 or more skulls not listed which must yet be mended. There are also about 25 young skulls not mended.

One list headed by WM 38 is accurate stratigraphically in more or less descending order. The second list headed by EM 78 is a bit uncertain stratigraphically.

BONES

Measurements are in millimeters.

All length measurements are the greatest length except femur and tibia. The former shows the bicondylar length, the latter without spine. There are large numbers of bones not yet cleaned and mended.

Note. It will be noticed that measurements of the frontal bone give good indication of whether the skull is a long meso, or round head. Taking the greatest width in proportion to the length—straight line, nasion to bregma, long skulls show greater length than width in the frontal bone, while round or broad skulls show considerably greater width than length.

A COMPARISON OF MENTAL ABILITIES OF NOMADIC AND SEDENTARY INDIANS ON A BASIS OF EDUCATION

By THOMAS R. GARTH

IN AN article by the writer entitled, "The Comparison of the Mental Abilities of Mixed and Full Blood Indians on a Basis of Education,"¹ he showed that the mixed-blood performance was eleven per cent better on the average than that of the full-blood Indian performance. The full-blood Indians reported on were of Plains and Southeastern tribes. And since they were of ancestry of nomadic habits roving over the plains and through the southeastern forests, we have conceived the problem of comparing these individuals of so-called nomadic habits with pure-blood Indians of an ancestry of decidedly sedentary habits.² These are the Pueblo, Zuñi and Hopi Indians, who for generations have by crude agricultural methods wrested their livelihood from the soil. Of the Plains and Southeastern Indians, our "nomadic" group, there were two hundred and fifteen full-bloods, while of the Southwestern or Plateau Indian group, our "sedentary" group, there were two hundred forty-three full-bloods. We have no device for determining whether or not these were really full-bloods, but we have taken the statements of the Indians themselves, which is accepted by the government of the United States.

Table I³ which gives the educational composition of the two groups⁴ shows that the factor of education was kept balanced in

¹ Psychol. Review, vol. 29, no. 3, 221-236.

² The data for the sedentary tribes was secured on an expedition to the Indians made possible by courtesy of the Grants Committee of the American Association for the Advancement of Science in the spring of 1921.

³ The writer acknowledges the assistance of his graduate students in scoring papers for data used in this report, particularly Misses Florence M. Mercer, Helen G. Mercer, and Irma Gesche at University of Texas.

⁴ The experimenter is under obligations to Professor A. L. Kroeber of the University of California, and Professor J. E. Pearce of the University of Texas for assistance in classifying the Indians as nomadic and sedentary.

all group comparisons for there were just about the same number from any school grade in both groups. Because, however, of the small total number of cases it was necessary to combine fourth and fifth grades, sixth and seventh grades, and eighth, ninth and tenth grade subjects each respectively into a sub-group. This makes three educational sub-groups, I, II, and III.

TABLE I
COMPOSITION OF SUB-GROUPS

Sedentary	Number of cases	Total
Sub-group I		
4th Grade	43	
5th Grade	46	89
Sub-group II		
6th Grade	72	
7th Grade	43	115
Sub-group III		
8th Grade	20	
9th Grade	14	
10th Grade	5	39
Grand Total		243
Nomadic		
Sub-group I		
4th Grade	37	
5th Grade	57	94
Sub-group II		
6th Grade	49	
7th Grade	31	80
Sub-group III		
8th Grade	17	
9th Grade	17	
10th Grade	7	41
Grand Total		215

In order to make this comparison of the mental abilities of the two classes of Indians we have not used the intelligence tests, but have deliberately reverted to the use of group psychological tests of accepted value, such as those used by Pyle and his students on Whites, Negroes, and Chinese,⁵ and by Pintner in his mental

⁵ Pyle, W. H. *The Examination of School Children*, Macmillan, N. Y., 1913; *id.*, *The Mind of the Negro Child*, (School and Soc. 1915, vol. I, pp. 357-360); *id.*, *A Study of the Mental and Physical Characteristics of the Chinese*. (School and Soc., 1918, 8, 264-269.)

survey work.⁶ There were eight of these tests: as three controlled association tests, the opposites test, the genus-species test, and the part-whole test; the free association (continuous); three memory tests, logical memory, and rote memory concrete, and rote memory abstract; and one word-building or ingenuity test, called in the psychological laboratory the "aeirlp" test.

Table II gives the average and median scores for the nomadic and sedentary Indians in their educational sub-groups for each test. It also shows measures of variability and per cent obtained

TABLE II
OPPOSITE SCORES

Nomadic	Grades		
	4-5	6-7	8-9-10
No.	96	83	40
Ave.	6.7	9.7	13.5
A.D.	3.0	2.9	3.0
P.E.	2.5	2.5	2.5
Med.	6.4	9.5	14.1
Range	0-7	1-16	3-19
Sedentary			
No.	89	115	39
Ave.	5.5	9.08	10.03
A.D.	1.2	1.3	3.5
P.E.	1.01	1.1	2.95
Med.	5.1	8.6	9.3
Range	0-12	0-16	0-19

GENUS-SPECIES TEST SCORES

Nomadic			
No.	114	85	38
Ave.	7.1	9.5	13.2
A.D.	2.0	2.2	3.5
P.E.	1.7	1.9	3.1
Med.	6.1	8.9	12.7
Range	0-18	1-19	4-20
Sedentary			
No.	128	103	43
Ave.	2.8	6.6	10.5
A.D.	2.2	3.0	4.3
P.E.	1.9	2.5	3.6
Med.	1.3	5.5	11.7
Range	0-13	0-15	0-20

⁶ Pintner, Rudolph. *The Mental Survey*, Appleton, N. Y., 1918.

PART-WHOLE TEST

	4	Grades	
Nomadic	4-5	6-7	8-9-10
No.	85	77	39
Ave.	5.1	8.4	10.3
A.D.	.1	2.9	2.5
P.E.	.1	2.5	2.1
Med.	4.9	8.1	10.1
Range	0-13	2-20	2-19
Sedentary			
No.	129	102	43
Ave.	3.6	6.6	8.5
A.D.	2.5	2.5	2.2
P.E.	2.1	2.1	1.9
Med.	2.6	6.6	8.6
Range	0-10	0-11	2-14

FREE ASSOCIATION

Nomadic			
No.	105	81	38
Ave.	39	44.2	53.3
A.D.	12.3	8.7	8.0
P.E.	10.3	7.2	6.7
Med.	40	45.3	5.1
Range	0-75	5-68	39-74
Sedentary			
No.	120	101	38
Ave.	24.7	39.2	48.1
A.D.	10.7	10.4	13.2
P.E.	9.04	8.8	11.2
Med.	22.5	39.3	48
Range	2-62	4-70	10-74

LOGICAL MEMORY

Nomadic		Grades	
	4-5	6-7	8-9-10
No.	92	81	37
Ave.	14.7	25.6	28.2
A.D.	9.7	9.9	10
P.E.	8.2	8.3	8.5
Med.	12.8	26.0	29.5
Range	0-36	4-46	8-51
Sedentary			
No.	103	106	42
Ave.	9.8	24.12	32.4
A.D.	5.7	7.4	8.3
P.E.	4.8	6.2	7.01
Med.	8.14	23	34
Range	0-29	0-48	10-54

ROTE MEMORY-CONCRETE

Nomadic			
No.	106	83	38
Ave.	37.5	39.9	43.1
A.D.	4.8	4.3	2.3
P.E.	3.9	3.6	1.9
Med.	37.6	39.3	41.3
Range	22-58	26-54	32-56
Sedentary			
No.	117	88	42
Ave.	29.4	35.5	38.2
A.D.	5.9	6.09	6.1
P.E.	4.9	5.1	5.2
Med.	31.3	34.8	38.5
Range	1-47	12-50	23-51

ROTE MEMORY-ABSTRACT

Nomadic		Grades	
	4-5	6-7	8-9-10
No.	106	83	38
Ave.	27.1	32.2	38.8
A.D.	6.6	5.3	4.3
P.E.	5.6	4.4	3.5
Med.	25.9	31.8	38.5
Range	6-51	17-47	24-51
Sedentary			
No.	117	88	42
Ave.	21.8	26.4	34.4
A.D.	5.4	3.3	5.2
P.E.	4.5	2.8	4.4
Med.	21.6	28.3	33.9
Range	3-39	1-47	21-46

WORD-BUILDING "AEIRLP"

Nomadic			
No.	101	80	35
Ave.	10.1	12.9	15.9
A.D.	4.0	3.5	7.1
P.E.	3.3	2.9	6.1
Med.	9.5	13.0	14.5
Range	0-21	0-22	0-22
Sedentary			
No.	98	105	39
Ave.	4.6	7.2	10.2
A.D.	2.5	4.9	5.4
P.E.	2.1	4.1	4.6
Med.	4.9	7.3	10
Range	0-15	0-18	0-24

upon dividing the average scores of the sedentary sub-groups by those of the corresponding nomadic sub-group. Thus, the average score of the nomads in the fourth-fifth sub-group in the opposites test is 6.7, and that of the sedentary Indians for the corresponding educational sub-group is 5.5. The ratio of nomad score to sedentary score is then 121. (See Table III.) In the same test for the next higher educational sub-group, the sixth-seventh grade, this ratio is 106, and for the most advanced educational of sub-groups this is 134. In the genus-species test, (again in Table III), the ratios of sedentary average score to nomad average score read: 253 for fourth-fifth grades, 143 for sixth-seventh grades, and 125 for eighth-ninth-tenth grades. Table III gives the average ratio

TABLE III
(Showing Per cent Obtained by Dividing Nomadic Average Score by Sedentary Average Score.)

TEST	SUB- GROUP 4-5	SUB- GROUP 6-7	SUB- GROUP 8-9-10	TOTAL	AVE.	RANK
(1) Opposites	121	106	134	361	120.3	4
(2) Genus-Species	253	143	125	521	173.6	7
(3) Part-Whole	141	127	121	389	129.6	6
(4) Free Association	157	112	110	379	126.3	5
(5) Logical Memory	150	106	87	343	114.3	1
(6) Rote Memory, Con.	127	112	112	351	117	2
(7) Rote Memory, Abs.	213	121	112	356	118.6	3
(8) Word Building	219	179	155	553	184.3	8
(9) Average Per cent	161.3	125.7	119.5		135.5	

for the sub-groups for each test in column (5) and the average ratio for a sub-group in all tests and the average of the facts of column (5) in row (9). Table III also gives the rank, column (6), of the total averages of column (5). It will be seen that on the whole the nomads, grade for grade, excel the sedentary Indians in all these tests of higher mental process, and that the average ratio is 135, or that the former are 35.5 per cent better than the latter on the whole.

The question now arises as to whether or not these differences as indicated are real. This may be determined by ascertaining the per cent of overlapping of one distribution on another, or finding out what per cent of one series of measures, as that of

sedentary Indians, attain and exceed the median of the nomadic subjects for a sub-group for a test. These facts are given in Table IV. These measures of overlapping range from that of 5 per cent as found in sixth-seventh grade sub-group for the Word Building Test to 61 per cent in the Logical Memory Test for the eighth-ninth-tenth grade sub-group. The averages of the overlapping for the respective sub-groups are 27 per cent, 34 per cent, and 37 per cent. On the whole the differences tend to be real differences as thus determined, but they are greatest in the fourth-fifth grade sub-group and least in the most highly educated sub-groups and they are in the same direction, in favor of the nomads, with the

TABLE IV
(Showing Overlapping—Per cent of Sedentary Scores that Attain and Exceed Median of Nomadic Scores.)

	Grades		
	4-5	6-7	8-9-10
Opposites	47	52	20
Genus-Species	18	31	49
Part-Whole	37	42	39
Free Association	12	30	27
Logical Memory	38	43	61
Rote Memory-Concrete	18	36	38
Rote Memory-Abstract	34	33	32
Word Building	15	5	30
Average	27	34	37
Median	26	34	35

exception of the eighth-ninth-tenth Logical Memory Test when the sedentaries excel the nomads.

In conclusion then, we may say that:

1. In tests of higher mental process, the Indians of nomadic ancestry are on the average 35 per cent better than those of sedentary ancestry.

2. They are more nearly alike in their performance of memory tests, being more alike in this respect in Logical Memory than in Rote Memory for Abstract words.

3. They are least alike in their performance of the ingenuity test, which of all the tests, requires possibly the most thinking.

4. The differences grow less as the two larger comparative groups can show more education, or education reduces the differ-

ences in the test performance between the nomadic and sedentary Indians, but never less than about 20 per cent in favor of the nomadics.

5. The reader will note the great amount of variability in measures as indicated by the range as given for each test. For instance in the fourth-fifth grade sub-group in the Rote Memory Test-Concrete see where the Nomadic lowest score was twenty-two and the highest fifty-eight, while in the case of the Sedentary Indians the lowest score was one and the highest forty-seven. Just the range of lowest score to highest indicates the superiority of the Nomads in this test. See also an illustration in the case of Rote Memory-Abstract where the Nomadic lowest score was six and highest was fifty-one and the Sedentary score was for lowest three and highest thirty-nine. But these are rather vague measures of a difference.

6. For purposes of direct comparison we cannot rely on such method as that indicated above, but we must have some representative measure which may be consistently used and for that reason we have resorted to using the average as a representative measure when it comes to getting the relative performances expressed as ratios. This makes it possible to say that on the average the Nomadic performance is 35 per cent better than that of the Sedentary performance.

7. Again if one questions the value of averages and their comparison as showing real differences we may put the data to the crucial test of finding how many Sedentary Indians attained and exceeded the median performance of the Nomadics. This will produce the more conclusive result. We find this in the overlapping. By this method we can say that on the average only 32.7 per cent of the Sedentary subjects did even as well as the median Nomadic subject or better than that. That is to say, 67.3 per cent, on the average, of the Sedentary subjects fell below the Nomadic median performance.

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SOUTHERN MAIDU RELIGIOUS CEREMONIES

By EDWARD WINSLOW GIFFORD

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INTRODUCTION

IN CALIFORNIA there were four cult religions which have been designated by Professor A. L. Kroeber as the New Year cult, the Kuksu or God-impersonating cult, the Jimsonweed cult, and the Dream cult. These four cults had their strongholds respectively in northwestern California, in central California, in the western part of southern California, and on the Colorado river. It is the God-impersonating or Kuksu cult with which this paper is concerned.

As the name "god-impersonating" implies, the central Californian cult was one in which the participants in the most important ceremonies impersonated spirits and deities. No actual masks were worn, but by means of paint, feathers, ornaments,

and grass veils, the participants disguised themselves so as to be unrecognizable in many cases.

The hotbed of this system of god-impersonation is placed by Kroeber among the Patwin¹ of the lower Sacramento valley. The distinctive traits of the cult system are regarded by Kroeber as the presence of a male secret society, the use of disguise, and the use of a large earth-covered house together with a log foot-drum. Although the earth-covered house occurred as a dwelling alone among some groups adjoining the area in which the Kuksu cult was practiced, its use as a ritualistic chamber seems to coincide with the Kuksu cult rather closely. The foot-drum was used only so far as known by tribes that practised the rites of the god-impersonating Kuksu cult.

To date the fullest published knowledge on the Kuksu cult concerns the Northwestern Maidu,² the Patwin,³ and the Pomo.⁴

Kroeber considers that the Patwin have the cult in its most elaborate form and that the Pomo and Yuki form a sub-unit as against the Patwin and Northwestern Maidu, the latter having borrowed many of their ceremonies from the Patwin.

The Miwok of whom we have information, and apparently the Costanoan and Salinan stocks, seem to have participated rather in the Pomo than in the Patwin form of the ritual.⁵

The inference is that the valley Patwin and Maidu, although centrally located with reference to the distribution of the whole dance system, possessed it in an aberrant form, and that the border tribes, which customarily evince cultural traits in their most pared-down condition, are in this case the more representative. This can mean only one thing. The Maidu and Patwin once shared the generalized or Pomo-Yuki-Miwok form of the cult, perhaps even originated it. Either because of this earlier start, however, or because of a

¹ A. L. Kroeber. Handbook of the Indians of California, B.A.E., Bull. 78, 364, 1925.

² Roland B. Dixon. The Northern Maidu, Bull. A.M.N.H., xvii, 283-333, 1905.

³ A. L. Kroeber. Handbook, chapter 26.

⁴ S. A. Barrett. Ceremonies of the Pomo Indians, Univ. Calif. Publ. Am. Arch. Ethn., xii, 397-441, 1917. Edwin M. Loeb. Pomo Folkways, Univ. Calif. Publ. A. A. E., xix, 149-405, 1926.

⁵ Kroeber. Handbook, 381.

more rapid progression, they developed the generalized form of the system to its limits and then passed beyond it to their own peculiar *Hesi-Moki* form, leaving the outer tribes, such as the Pomo and Miwok, adhering to the older rites, and the extreme marginal Yuki perhaps attaining only to the rudiments even of these. There is thus a ritual superimposed upon a ritual in this cult, a *Hesi* system laid upon an older *Kuksu* system. This crown attained in the *Hesi* belongs only to the Patwin and Maidu, and it almost certainly is a Patwin product, that the generic *Kuksu* basis also had its origin among the Patwin, at least largely, is therefore a reasonable possibility.⁶

This central Californian God-impersonating cult has been called synonymously the *Kuksu* cult because of the connection with it of a personage or deity called *Kuksu*. Among the Pomo he is the god of the south, among the Northwestern Maidu he was the first man, among the Miwok he is a sylvan spirit. However, among this last people the concept may have been introduced within the last sixty years. Among the Patwin and Northwestern Maidu the *Kuksu* impersonator did not dance or form the central figure of a ceremony. Among the Pomo, Costanoan, Salinan, and Sierra Miwok there were *Kuksu* ceremonies. This is one of the features that Kroeber contrasts, in the paragraph quoted just above, with the *Hesi-Moki* form of the cult which seems to have been the crowning development among the Patwin and Northwestern Maidu. In this paper I shall call this highly elaborated Patwin form of the cult the *Hesi* form, that among the Pomo and other groups the Non-*Hesi*.

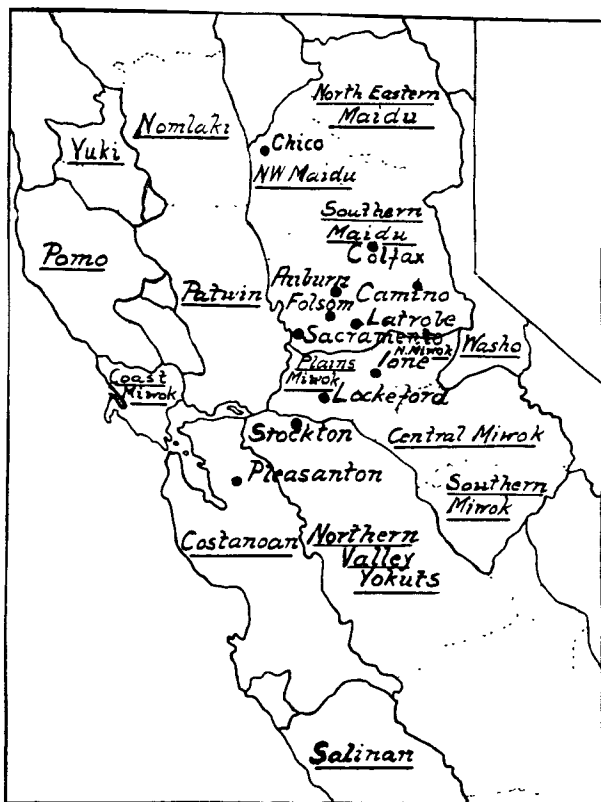
It was for the purpose of determining the ceremonial relations of the Southern Maidu that the writer visited them for a brief period. The material obtained was far from voluminous, but is sufficient to reveal roughly the relation of the ceremonialism of the Southern Maidu to that of their northwestern congeners and their other central Californian neighbors, the Patwin and Miwok. The information obtained concerns the southernmost Southern Maidu. These include both valley dwellers and hill dwellers, a point which should be borne in mind, since the hill dwellers along the whole length of the Sierra Nevada seem to have attained far less complexity in ceremonialism than the valley dwellers.

⁶ Kroeber. Handbook, 381

The data gathered throw additional light upon what we may call the two elaborate developments of the Kuksu cult, which, as stated above, I shall call for convenience the Hesi and Non-Hesi forms. The Southern Maidu data also indicate the presence of ceremonies antedating in that region the two forms of the Kuksu cult just mentioned. The direction in which the ceremonial influences traveled is also indicated, two waves having reached the Southern Maidu, one from the north, the other from the south. The southern wave apparently had behind it the stimulus of the Ghost Dance movement of 1872; in fact, it may be regarded as a manifestation of that movement, in which the old dances of Non-Hesi form of the Kuksu religion were revived and adapted to the aims of the messianic Ghost Dance religion, then taught to groups which hitherto were unfamiliar with the dances, although probably already possessing a simple form of the Kuksu Cult system. Thus, in south central California, the revival stimulated by the Ghost Dance movement paralleled that in north central California. The Southern Maidu data also throw some light on the questions of initiation, of the relation of the chief to the cult, and of the relation of the shaman to the cult. The whole situation, however, is complicated by the presence of apparently three strata of ceremonies which may be spoken of as indigenous, northern, and southern (Ghost Dance influence). The use of the term indigenous does not imply that the ceremonies necessarily arose upon the spot. It merely means that so far as our knowledge goes we have no record of their having been introduced from elsewhere, as in the case of the northern and southern introductions.

The time spent among the Southern Maidu was so brief that descriptions of the dances were not obtained in any detail. In fact, the object of the visit was to work out the general relationships of the Southern Maidu ceremonies rather than to get full details as to their actual enactment. Such data as were gathered, although quite fragmentary in character, are presented under appropriate headings in the following pages. No data were recorded concerning the funeral and mourning ceremonies of the Southern Maidu.

With the Washo, the eastern neighbors of the Southern Maidu, relations seem to have been hostile, for informants said the Washo were always wanting to fight and used to cross the mountains and kill Maidu. With their other central Californian neighbors, the Miwok on the south, the Patwin on the west, and other Maidu on the north, the Southern Maidu seem to have been on friendly



Linguistic groups (names underscored) and modern towns.

terms, and it was these neighbors that seem to have exerted a profound influence on Southern Maidu ceremonialism.

In this paper the Southern Maidu who come particularly under consideration are those dwelling in the region south of a line drawn from Colfax through Auburn to Sacramento. Auburn and Colfax are in the hills and lower mountains. Folsom, referred to in the

paper, is in the lower foothills near their junction with the plains; so also are Michigan Bar and Ione. Ione is in Northern Miwok territory. Plymouth and Forest Home are in the foothills. The following places referred to are also in the hills and are on the line of the railroad from Sacramento to Placerville. In ascending order they are: Latrobe, Brela, Dugan, Shingle Springs, and Camino.

To further locate these various spots I shall mention them by counties. Colfax and Auburn are both in Placer county. Folsom and Michigan Bar are at the eastern edge of Sacramento county. The Maidu village of Goduma, near Sacramento is near the western edge of the county and the only place referred to in this paper which is well out in the plains. Plymouth, Forest Home, and Ione are all in Amador county. In the Sierra Nevada region, culture, as a rule, grows simpler as one climbs higher. It grows more complex as one descends into the Sacramento and San Joaquin valleys, so that in the present paper Colfax and Camino represent the people who lived at the highest altitude and who had the simpler culture. Auburn and the region of Shingle Springs, Dugan, Brela, and Latrobe would represent an intermediate situation, lower in the hills and with a culture probably somewhat more complex than that of the mountain dwellers. Folsom, Michigan Bar, and Ione are near the border of foothill and valley and approach more closely the high culture of the delta region of the Sacramento and San Joaquin rivers. It is these places which seem to have been the first to receive the new ceremonial features of the southern (presumably Ghost Dance) stratum introduced from Pleasanton in Alameda county.

The data were recorded by the author in 1918 and 1923, with the exception of the few statements attributed to Miss Anna H. Gayton, which she recorded in the summer of 1925 from the lips of Tom Cleanso, a man of about 65 years of age, born at Goduma village, near Sacramento, California. All data were recorded for the University of California Department of Anthropology and are published with the permission of that institution.

The informants interviewed by the author in 1918 were Hattie Thomas of Camino, El Dorado county; Jesse D., born at Latrobe, El Dorado county, but married to a Camino woman and residing there; George Smith, fifty-eight years old, and his wife, of Shingle Springs, El Dorado county; Jim Dick, fifty-two years old, born at Coal Station, El Dorado county, and later resident of Auburn, Placer county; Henry Charlton, born in 1863 at Pokerville, near Plymouth, Amador county; William Joseph, perhaps fifty-five, born near Plymouth. The only informant interviewed in 1923 was Henry Charlton.

THE THREE STRATA OF SOUTHERN MAIDU DANCES

Southern Maidu dances seem to fall into three strata. Last and most recent are dances introduced apparently about 1872 by a teacher named Yoktco, whose home was near Pleasanton in Alameda county, where he resided in a mixed settlement of indigenous Costanoans and transplanted Northern San Joaquin Yokuts and Plains Miwok. This mixed assemblage represented the last of the Indians and their descendants once collected at Mission San Jose in Alameda county. Yoktco's language was Plains Miwok, but the ceremonies which he introduced among the Southern Maidu were not necessarily true Plains Miwok ceremonies, as the habitat of that people is the plains region lying largely east of a line drawn from Sacramento to Stockton. So the mere fact that Yoktco spoke Plains Miwok should not be taken as evidence that he necessarily introduced native Plains Miwok ceremonies among the Southern Maidu. On the contrary, the ceremonies which he introduced were said to have been those in vogue at Pleasanton⁷ in Alameda county, many miles removed from the Plains Miwok habitat. Yoktco's introductions among the Southern Maidu were spoken of by informants as "dances from the south," and as already stated they are doubtless to be regarded as ancient dances which were revived and made over through the stimulus of the Ghost Dance movement of the seventies. The dances which he introduced were the following: *hiweyi*, *kilaki*, *kuksui*, *lole*, *mamas*, *ta*, *tula*, *yomuse*. Two of these dances, *lole* and *yomuse*, were reputed to have had an earlier introduction among the Southern Maidu, having first appeared from the north. How much time intervened between their introduction from the north and their introduction from the south by Yoktco I cannot say. With the exception of *yomuse* and *ta* these dances introduced by Yoktco appear to have been introduced also among the Northern and Central Miwok, probably about the same time, by two other teachers named respectively, Sigelizu and Tciplitcu, so that their appearance among Southern Maidu and Sierra

⁷ From Pleasanton informants, in 1914, it was learned that *kuksui*, *lole*, and *hiweyi* (described as a shamans' dance for curing) were among the dances formerly practised there.

Miwok would appear to be part of a great missionary movement which presumably emanated from the Pleasanton region about 1872 and constituted the south central Californian manifestation of the messianic Ghost Dance religion. The various features that characterize this latest stratum of ceremonies will be considered later. That this stratum should be identified with the Ghost Dance movement of the early seventies there seems good reason to believe, and there is probably ample justification for equating it in a general way to the Patwin *boli* and the Pomo *maru* dances, as the modern Ghost Dance performances are designated by those two peoples. Like them, it consists of dances of the old Kuksu Religion that have been reinvigorated, remodeled, and adapted to the teachings of the messianic Ghost Dance Religion.⁸

A second and earlier stratum of dances is said to have come to the Southern Maidu from the north. It comprised the dances called *dape*, *kamin*, *lole*, *luhuyi*, *wulu*, *om wulu*, and *yomuse*. *Lole* and *yomuse* we have just referred to as having been introduced also at a later time, from the south. Whether the two forms of these dances, northern and southern, were identical I cannot say. With the dances thus attributed to a northern origin the name of no teacher is associated. That the introduction of these dances probably antedates considerably the introduction of the dances from the south by Yokto seem probable, for in the early seventies Stephen Powers⁹ found the dances *kamin*, *yomuse*, and *lole* being practiced in the Bear River region, which lies in the northern part of the Southern Maidu area. Powers' account gives no hint that they were recent introductions; but, on the contrary, gives the impression that they were old established ceremonies.

The dances which I have just enumerated as constituting the second stratum of Southern Maidu dances, that which came from the north, would seem to belong to the God-impersonating Cult system. Two of them, in fact, *lole* and *luhuyi*, are listed by Dixon¹⁰ and Kroeber¹¹ as among the common and less sacred dances of

⁸ Kroeber gives a lucid account and map of the spread of the Ghost Dance Religion in northern California. Handbook, 375, 376, 368-873.

⁹ Tribes of California, Contributions to North American Ethnology, III, 324, 1877.

¹⁰ *Op. cit.*, 290, 291.

¹¹ Handbook, 435.

that cult among the Northwestern Maidu. The *dupe* dance, in which the spirit or animal impersonated was coyote, has an analogue among the Northwestern Maidu in the *oleli* dance which is one in which a single spirit impersonator appears.¹² Moreover, *dupe* is the term for clown, an actor who seems to have been well established among the Southern Maidu, who identify him with coyote which the Northwestern Maidu do not. All of these dances among the Southern Maidu with whom I am acquainted take place in the ceremonial dance house or earth-covered lodge, which would seem to indicate that they are unquestionably of the generic type which we are calling Kuksu or God-impersonating, although they probably belong to that particular sub-class designated as common dances, inasmuch as the spirits impersonated, if any, are of scant importance.

The third and lowest stratum of Southern Maidu dances which I have spoken of as indigenous dances, since it seems impossible to attribute them to introduction from elsewhere, are the *bu* or skunk dance (perhaps to be identified with the disputed *weyo* dance of the Northwestern Maidu),¹³ the *lumenwo* dance, the *weda* dance, the *wetem* dance, and the *yohohanup* dance. The *weda* dance, which is described by Dixon for the Northeastern Maidu¹⁴ and by Powers¹⁵ for the Southern Maidu of the Bear River region, was held out-of-doors and should undoubtedly be excluded from the category of God-impersonating, as the descriptions of it give no implication of such a motive. In the *bu* and *lumenwo* dances, the skunk and presumably the creeper are represented. If the *lumenwo* truly represents the creeper, a small bird which runs spirally up and down the trunks of trees in search of food, then it is probably to be equated to the Northwestern Maidu *tsamyempi* dance and the Central Miwok *akantoto* dance. It seems proper to regard both the *bu* and *lumenwo* therefore as belonging to the God-impersonating Cult system. I have no evidence to indicate whether the *wetem* and *yohohanup* dances were held within the earth-

¹² Kroeber. Handbook, pp. 434, 435.

¹³ Kroeber. Handbook, 436.

¹⁴ *Op. cit.*, 318.

¹⁵ *Op. cit.*, 324.

covered dance house or out-of-doors, but presume the former to have been the case. The use of the whistle and cocoon rattle in the *yohohanup* dance suggests that it was practised indoors. The *wetem* dance was also called the "war dance", because the dancers carried bows and arrows.

If the attribution of the above dances to the indigenous or earliest stratum is correct, it seems likely that we may include them, with the exception of the *weda*, in the God-impersonating Cult system. On the other hand, if the attribution of these dances to this stratum, with the exception of the *weda*, is wrong, then we are justified in saying that the God-impersonating Cult is relatively recent in appearance among the Southern Maidu. However, I see no reason for thus discounting the evidence and feel that it would be gratuitous to deliberately deny the truth of this particular evidence and assume the truth of other evidence from the same sources. It, therefore, seems to me justifiable to regard the earliest stratum of Southern Maidu dances, with the exception of the *weda*, as constituting the simplest and least elaborate form of the God-impersonating Cult system with which we are acquainted. Lying, as the Southern Maidu do, upon the eastern periphery of the area in which the God-impersonating cult is practiced, it is probably proper to regard this lowest stratum of dances as perhaps representing the type of simple dances from which the elaborate ceremonies of the Patwin and Northwestern Maidu have been evolved. That they are the direct ancestors of the elaborate ceremonies of the Patwin and Northwestern Maidu I do not for a minute believe, but I do think that they give us some conception of the simple type from which these complex ceremonies have probably been elaborated. In this respect their relation to the highly elaborated ceremonies of their neighbors parallels in a general way the relation of the simple ceremonies of the Yuki, coast Pomo, and Coast Miwok to the elaborate ceremonies of the inland Pomo. In other words, the Southern Maidu, so far as their earlier dances are concerned, and the coast Pomo, Yuki, and Coast Miwok are on the margins of the area of the God-impersonating cult and presumably show early forms of that cult; forms, however, which are far from identical, for the Southern Maidu seem to have represented only

minor spirits and animals in their earliest ceremonies, whereas the Yuki and coast Pomo represented the creator and the god Kuksu.

In the following discussion of Southern Maidu data I shall begin with that which pertains to the third and latest stratum of dances, which was introduced by Yoktco, since it is concerning this that the memory of informants is freshest and the information consequently fullest. From this I shall work back to the less known introductions from the north and the indigenous or earliest stratum of dances.

DANCES FROM THE SOUTH

As already explained, these dances, which should doubtless be connected with the Ghost Dance cult (Pomo *maru* and Patwin *boli*), were introduced apparently about 1872 by an Indian named Yoktco. They consisted of the following dances: *hiweyi*, *kilaki*, *kuksui*, *lole*, *mamas*, *ta*, *tula*, and *yomuse*. With the exception of the *ta* and *yomuse* dances, these are all dances which are quite widespread, their names being largely characteristic of the Non-Hesi (Pomo) form of the God-impersonating cult. I rather suspect that the *ta* and *yomuse* dances really belong to the earliest and middle strata of Southern Maidu dances, since the names are not found in other groups. Of the several dances introduced from the south, *hiweyi*, *kilaki*, *kuksui*, and *lole*, are found among the Pomo. None of these dances, however, with the exception of the *lole*, occur among the Northwestern Maidu, and none, with the exception of the *lole* and *kilaki*, among the Patwin. The affiliation is therefore plainly with the Pomo and Miwok rather than with the Patwin and Northwestern Maidu. Needless to say, this affiliation, so far as the Miwok are concerned, is strengthened by the reported southerly origin of these dances.

Connected with these dances of late introduction seems to have been the custom of confining boys and girls in the dance house in order to teach them the songs which were sung as dance accompaniment. That such confinement took place only for the stratum of dances introduced by Yoktco seems likely. At any rate it was definitely ascertained that such confinement took place for the dances introduced by Yoktco, whereas the implication is that there was no confinement for the dances of the two earlier strata,

northern and indigenous. This is suggested by the fact that in the hill country where the dances of the third stratum never became established there was no confinement of boys for dance instruction. There was, however, in early times a confinement of boys in teaching them to become shamans, and also confinement of both boys and girls by the chief for ear-piercing. Songs were learned on this latter occasion, but no dances. It seems likely that these customs of confining in the dance house offered a foothold for the confinement in connection with the teaching of the new cycle of dances introduced by Yoktco. A sidelight on this matter is revealed by the case of the Central Miwok, who neither confine boys in connection with shamanistic instruction nor in connection with the learning of dances and songs of the latest stratum of dances which was apparently contemporaneous with the group of dances introduced by Yoktco among the Southern Maidu.

Following the death of the missionary Yoktco, apparently about 1874, his work was continued by a blind man named Rice. It was he who confined and instructed certain of the informants whom I interviewed. One informant was confined for eight days in the dance house (*kum*) and there learned all of the songs of the cycle of dances introduced by Yoktco. The informant was about twelve years old at the time and there were many other boys confined with him. They had all been selected by Rice. There were no girls being instructed on this occasion. The novices were allowed plenty of food, but no meat or salt. The informant and his companions on this occasion learnt many songs, but only one dance, the *hiweyi*.

A boy or girl who was learning to dance was called a *teme*, a term which was equated by the informant to the Northwestern Maidu term *yombasi* (preliminary initiate) with which he was familiar. The term *teme* suggests the word *temaya* which was the name applied to the dance manager Yoktco. This is cognate with the Patwin term *temeyu*, the name of a Patwin dance official who wears a long feather cloak and whose business is to prevent the escape of novices from the dance house,¹⁶ and with *temayasu*, a Sierra Miwok impersonation of probable late introduction.

¹⁶ A. L. Kroeber, unpublished notes.

Among the Southern Maidu the boys and girls who were selected for instruction by the *temaya* could not refuse to serve.

Another feature which seems to have marked the introduction of the new dances by Yoktco was that of the dance manager or *temaya*, whose functions, so far as they existed, had apparently previously been in the hands of the chief (*huk*) of each community. The characteristics of the *temaya* or dance manager strongly suggest the influence of the Ghost Dance religion of 1872. Its effect upon the ceremonial systems of the central Californian tribes is best known in the case of the Pomo and Patwin peoples. One characteristic of the Ghost Dance movement was the rise to power of dreamers or prophets who essayed to predict the future and whose influence largely eclipsed that of the chiefs who had previously been the leaders of the Indian communities. Among the Southern Maidu the *temaya* or dance manager paralleled the Ghost Dance priest (*maru*) among the Pomo to the extent of depending upon his dreams for the regulation of the ceremonial proceedings.

The dreams of the *temaya* Yoktco were of the various spirits who were represented in the several dances. These spirits were said to belong in a class called *nedi*, different from ghosts (*üzwüze* or *us*) and from the human spirits or devils (*gakil*). The *nedi*, however, were human in form and were said to appear as very handsome men wearing the dance ornaments of the particular dance which each represented. Attention should be called to the similarity of the term *nedi* employed by the Southern Maidu for this class of spirits and the term *netdim maidu* or dreamer mentioned by Dixon.¹⁷ Each of the *nedi* spirits which was seen by the *temaya* Yoktco in his dreams was said to be that of a man who died long ago and for whom one dance was named. I have no evidence to show that spirits of this type were associated with the two older strata of dances among the Southern Maidu. As far away as Madera county, among the Southern Miwok, I have encountered the same idea that the dances of late introduction are named for people long dead. This is probably a Ghost Dance conception. In the case of one of the dances introduced by Yoktco,

¹⁷ *Op. cit.*, 271.

the *yomuse*, it is said that the name is that of a woman, long since dead, who was the inventor of the dance. The fact that no spirits were spoken of as connected with the dances of the two earlier strata, with the exception of the *yomuse* just mentioned, seems hardly to warrant the interpretation that there were no spirits, but rather that the older ideas have been swamped by the teachings of Yoktco.

Flourishing alongside the belief that the spirits impersonated in the dances of Yoktco's introduction were spirits of men long since dead and seen only in dreams, is the idea that Kukšu is a nature spirit who may be seen today in the woods and the sight of whom causes bleeding from the nose and mouth.

The dance manager or *temaya* was said to have been appointed by the chief (*huk*). At least such was the case in the lower foothills and in connection with the stratum of dances introduced by Yoktco. In the higher hills there was no *temaya*, the chief managing the dance arrangements himself. Presumably, this applied only to the two earlier strata of dances and not to the third or last stratum, which, however, seems never to have reached the higher hill country, except insofar as dancers from below went up to the hill villages and exhibited their dances.

Other officials in the dances of the third and uppermost stratum were as follows, all being subordinate to the *temaya*.

The drum major in charge of each dance was called *howapbe*. His activities resemble those of our drum majors. He was the Southern Maidu equivalent of the Miwok *sobobbe* and of the Eastern Pomo *xabedima*. The word *howapbe* is formed of the verb *howap* (to raise the hand as a signal to start dancing) and the agentive ending *be*. The *howapbe* was also called the *howap maidu*.

The clown, who is one of the characteristic figures of the God-impersonating cult is called by the Southern Maidu *dape*, which identifies him with Coyote who is also called *dape*. He might appear in any dance of Yoktco's cycle. Other important dance officials are the drummer who is called *dulbe* or *kilembe*, from the words *dul* and *kilem*, which mean drum, and the agentive ending *be*. Alternative terms are *dulbobe*, *dulim maidu*, and *kilemem maidu*. The business of the drummer was to furnish accompani-

ment to the dances by stamping on the great log foot-drum which was always located in the dance house (*kum*). Another important individual was the singer or *solbe*, who was usually accompanied by a chorus. In modern times at least, Northern Miwok and Southern Maidu singers have combined in furnishing the accompaniment for dances of both peoples. Dancers are called either *payobe* or *payuge* from the verb *payok*, to dance.¹⁸

A tabu similar to one which I have found among the Central Miwok prevailed among the Southern Maidu and certainly was connected with the dances of the latest stratum. This tabu prohibits a dancer eating by himself after a dance under penalty of becoming sick. All dancers must have one meal together after the termination of the ceremonies. Thereafter each may resume his normal eating habits.

It seems quite clear that the Southern Maidu cultural setting for the new dances which were introduced by Yoktco was quite different in certain respects from the Miwok cultural setting. The prominent part played by shamans among the Southern Maidu is one feature which differentiated them from the Miwok. Apparently the shamans' contests, séances, and the initiation of new shamans were all lacking among the latter people. This greater importance of the shaman among the Southern Maidu

¹⁸ *Individual Participants.* Charley Hunter, a man whom I did not meet, said to be a resident of Knightsville, Sacramento county, was mentioned by the Camino informant as the present head of the Southern Maidu dancers. He took them on one occasion to West Point in Miwok territory, where they gave a performance.

William Joseph was a singer at the *kuksui* dance at Forest Home, Amador county, described on page 232. Henry Charlton, born of Maidu parents in 1863 near Plymouth, Amador county, was another Southern Maidu singer. He was taught dance songs by two older singers, Peter Andreas and an old man named Charley. He paid nothing for the instruction. Besides singing at Ione in Northern Miwok territory, Henry Charlton formerly sang at Forest Home, Amador county, in Southern Maidu territory. He has sung for the *tula*, *kamin*, *wokile* (a Miwok dance equated to *lumenwo*), *hiweyi*, *yomuse*, and *lole* dances, but has never danced himself. Charlton said he had never seen a *kuksui* dance, though it had been performed more than once in his lifetime. His position as singer was given him by the dancers. He mentioned three other singers who sang the same songs as he: Ione Allec, William Joseph, and Dan Gainor. The last is a Northern Miwok and presumably the first is also, judging by his appellation, Ione being in Northern Miwok territory. Whether this mingling of singers from two peoples speaking utterly different languages is typical of border conditions in the pass I cannot say.

may have paved the way for the *temaya* becoming the head of the dance organization rather than the chief, while among the Miwok, on the other hand, the chief seems always to have been not only the civil leader but also the head of the ceremonial organization.

I shall discuss under the headings of Shamanistic Setting and Social Setting certain features of Southern Maidu culture which, so to speak, formed the religious setting for the introduction of Yoktco's dances. The features which I refer to are shamans, spirits, and the position of the chief. The dances of the first two strata formed the most important background of all for the introduction of those of the third stratum. The third stratum came as a more varied and advanced form of something which had already been long the vogue.

Yoktco, the Introducer of Dances

I have embodied in the following paragraphs all of the information that I could collect concerning the individual Yoktco. All that can be learnt about such a person who was the moving factor in an important religious innovation is naturally of great use in understanding fully the religious movement itself.

Yoktco, the introducer of the third and latest stratum of dances was said by informants to have dwelt in the vicinity of Mt. Diablo (regarded by the Indians as the home of spirits), Contra Costa county. Actually he lived at the Indian settlement near Pleasanton, Alameda county, but the fact of dwelling near the great mountain, which is visible over a large area in central California, seemed to impress the informants more and may actually have been also impressed upon them by Yoktco himself.

Yoktco normally lived near Pleasanton, but at times came to the Sierra Nevada foothills to teach people dances. One informant said of him that "he travelled by the ocean," probably meaning that he had been to various places on the central Californian coast. Among the Sierra Nevada peoples a visit to the ocean brought considerable prestige to a man as a great traveller. Yoktco is reported to have said that he learned in his youth dances which he in turn taught to the Southern Maidu. In his own days of

instruction Yoktco was locked for sixteen days in the dance house at Pleasanton.¹⁹

At dancing time Yoktco spoke a strange language. Yokuts or Costanoan perhaps, both of which he would have become acquainted with at Pleasanton, where resided the Indians formerly gathered at Mission San Jose, Alameda county.

When Yoktco came to Ione, in Northern Miwok territory, to give instruction he brought dancers from Pleasanton to show the Ione people the steps. He also taught his dances at Folsom in Southern Maidu territory. There he taught *hiweyi*, *kilaki*, *kuksui* (with two performers called *kuksui* and *musil*), *mamas*, and *ta*.

Yoktco was a dreamer who made public his dreams as divine revelations. In this respect his teachings seem to resemble those of the *maru* or Ghost Dance dreamers of the Pomo.²⁰ Yoktco dreamt of an altercation between Moon and Coyote. The former said people were to die and return in three or four days. Coyote said they were to die and not return, and that people were to cry for them. Yoktco did not predict the end of the world, but he did present an equivalent idea, for he dreamt that this world would be filled by white people and that there would be another world for Indians. He taught that people would live long and never be sick longer than a day or two if they danced. The informant, Jim Dick was seven or eight years old when Yoktco died. He probably died about 1873 or 1874.

Yoktco's successor was an old blind man named Rice, whom Yoktco named as his successor. Rice was the singing instructor of the Auburn informant Jim Dick when the latter was about twelve years old. Rice died about 1888.

There would seem to be little doubt but that the missionary endeavors of Yoktco were stimulated by the Ghost Dance movement of the early seventies. The dances he introduced may be regarded as the south-central Californian form of the Ghost Dance cult, though they may actually have originated with the

¹⁹ In 1914, a Pleasanton informant mentioned *kuksui*, *hiweyi*, and *lole* as dances formerly shown at that place, thus in part corroborating the list of dances attributed to Pleasanton by Southern Maidu informants.

²⁰ S. A. Barrett. Ceremonies of the Pomo Indians, Univ. Calif. Publ. A A.E., XII, 440, 1917.

Pomo, from whom they were perhaps transmitted to the Pleasanton people, and thence to the Sierra Nevada groups with whom the Pleasanton people seem to have kept in close touch. Southern Maidu ceremonies were thus enriched by the addition of more complicated rites introduced from Pleasanton, where they were practised by a mixed population of Costanoan, Yokuts, and Plains Miwok.

To the south among the Northern Miwok a similar, and apparently contemporaneous, teacher appeared from the west. His name was Sigelizu and he was a Plains Miwok of Lockeford, San Joaquin county. He died in 1876. The dances he taught came also from Pleasanton.

Still further south among the Central Miwok there was a great influx of new dances, apparently in the seventies, which were in part attributed to a teacher from the west named Tciplitcu. He was probably a Costanoan or a Yokuts by birth and apparently spoke both of these languages, as well as Miwok. That he, too, first felt the missionary inspiration at Pleasanton seems likely.

Notes on Dances from the South

I have embodied in the following paragraphs the few data relative to the enactment of dances of the third stratum, that is from the south, which I gathered. These dances although bearing the names of dances of the ancient Kuksu cult as practised especially among the Pomo are probably all to be regarded as the ancient dances modified by the vivifying influence of the 1872 Ghost Dance religion.

Hiweyi Dance.—This is the one dance in which offerings of acorn meal are thrown on the fire during the progress of the dance. The dancers wear eagle down. Faye describes this dance as it is performed for the curing of the sick.²¹ In 1914, a Costanoan informant at Pleasanton, the place from which it is reputed to have been introduced to the Southern Maidu, spoke of this dance as a shamans' curing dance, thus corroborating the character given it by Southern Maidu informants, as well as their attribution of it to Pleasanton.

My informants report this dance as having been performed at Folsom and Michigan Bar, Sacramento county, Latrobe, El Dorado county, and Auburn, Placer county.

²¹ Paul Louis Faye. Notes on the Southern Maidu, Univ. Calif. Publ. Am. Arch. Ethn., xx, 51, 1923

Kilaki Dance.—This dance was shown at Folsom, Sacramento county, and at Auburn, Placer county.

Kuksui Dance.—Latrobe, El Dorado county, was one of the places where this dance was held. As seen there it was described as follows. There were three or four dancers. The *kuksui*, who was Molokui, the informant's mother's father, wore a long cloak and head dress. A dancer described as *kuksui's* partner was called *musil*. *Musil* wore a mass of horse hair evidently in imitation of a woman's hair. Horizontal red and black stripes were painted upon his body and legs, and vertical stripes on his face. On this occasion there were six singers near the drum. The *kuksui* approached the singers as he danced. The informant said that no women or children were allowed to see this dance. At Folsom, Sacramento county, the *kuksui* performance embraced impersonations of both *kuksui* and *musil*.

In a *kuksui* dance seen by Mrs. George Smith at Forest Home, Amador county, a clown (?) participated. He wore a feather skirt and his chest and abdomen were painted with red, white, and black vertical stripes. He had paint on his face, and feathers on his head, but no horse hair. He threatened the audience with a bow and arrow as he danced while the *kuksui* was performing. Five or six companions of the *kuksui* had white down feathers on their bodies, which were made to adhere by first painting the body with a sort of wax. These dancers had red, white, and black paint on their faces. They were called *temaya*, a word also used for the dance manager (see page 225).

Other places mentioned at which the *kuksui* dance was performed were Michigan Bar, Sacramento county, and Camino, El Dorado county. The Camino performance was by dancers from Auburn, Placer county, where it was also danced. The performance of the *kuksui* dance at Camino by the Auburn dancers took place about 1893 and had certain unique features. Several dancers, all representing *kuksui* and wearing turkey feather regalia, took part. There was no *musil* in this performance.

The *kuksui* (dancer or spirit ?) sometimes frightened women when they were going up the creek to gather acorns.

Mamas Dance.—This dance was performed at Folsom, Sacramento county, and at Auburn, Placer county.

Ta Dance.—Four men, six women, and a drum major (*howapbe*) participated in this dance. The singing for the dance was accompanied by stamping on the foot-drum. The dancers evidently squatted, for the informant said they looked as though they were sitting down. They danced in one place without going around the fire. One man occupied a position between the door and the middle of the right side, another between the middle of the right side and the drum, another between the drum and the middle of the left side, and the fourth between the middle of the left side and the door.²² The six women were divided equally between the two sides of the house, but stood outside (behind) the men, that is, nearer the wall of the circular dance house.

²² Right and left are spoken of as viewed from the doorway of the dance house looking into the dance house.

The men danced holding their hands in front of them, palms down, buttocks protruded, legs apart, heads moved from side to side as in negation. The women danced where they stood, raising and lowering their hands, while holding their elbows near their sides. *Wolzo* is the name of the feather headdress worn by the men, *palpal* of the sticks with terminal feathers worn at the sides of the head. Each man carried a *toku* (whistle) which he tooted continually as he danced. The men wore horizontal red (*onoyu*) stripes on the front of the body, also on the arms and legs. Each man wore a back apron (*hikli*) and a breechclout (*mandanikil*).

This dance is reported as having been performed at Camino and Latrobe, El Dorado county, at Michigan Bar and Folsom, Sacramento county, and at Auburn, Placer county.

Tula Dance.—This dance, with the name written *tura*, is described by Faye.²³ My informants mentioned the wearing of eagle down in this dance.

It is reported from Camino, El Dorado county, where it was danced by visiting Miwok from Ione, Amador county. It was also danced at Latrobe, El Dorado county, and Michigan Bar, Sacramento county.

DANCES FROM THE NORTH

Of reputed northern derivation, doubtless antedating introductions by Yoktco, are the following dances: *dape*, *kamin*, *lole*, *luhuyi*, *wulu*, *om wulu*, and *yomuse*. Two of these, *lole* and *yomuse*, are reputed to have been reintroduced from the south by Yoktco, though personally I have grave doubts about this really being the case with *yomuse*. That these dances of reputed northern origin are probably considerably older among the Southern Maidu than the dances introduced by Yoktco is indicated by the fact that in the early seventies Powers²⁴ encountered on the Bear River the *kamin*, *yomuse*, and *lole* dances, apparently well established. This was about the time that Yoktco, a little further south, was introducing the dances of his cycle. Corroboration of the northern origin of these dances is forthcoming in part from the Northern Miwok, the southern neighbors of the Southern Maidu, who attribute their *luhuyi* and *kamin* dances to a northern origin also.

The *dape* or coyote dance has its parallel among the Northwestern Maidu in the *oleli* dance, in which the coyote is also impersonated. The *lole* dance and the *luhuyi* dance apparently are also common to the Northwestern Maidu where they are designated as *loli* and *luyi*. This leaves unidentified as to Northwestern

²³ *Op. cit.*, 49.

²⁴ *Op. cit.*, 324.

Maidu origin the *kamin*, *wulu*, *om wulu*, and *yomuse*, which, however, like the *lole*, *luhuyi*, and *dape* have nevertheless attributed to them a northern origin. As these dances appear to be of the same character as those of the God-impersonating cult among the Northwestern Maidu it would seem proper to regard them as belonging to that cult. In connection with the second stratum of dances, and the earliest stratum, there was no "initiation" or shutting of the boys in the dance house; nor did all boys become dancers. Some did not care to. The chief (*huk*) selected the boys for dance instruction, but there was nothing secret about the instruction. Everybody knew the youths were learning. Eighteen or nineteen years of age was the favored age at which instruction was given. The chief also selected girls as dancers for those performances in which women participated. These remarks probably apply also to the dances of the earliest or indigenous stratum.²⁵

I shall defer the discussion of the Southern Maidu cultural setting in which these dances were imbedded until after presenting the data concerning the earliest stratum of dances, that to which no foreign origin was attributed.

In the following paragraphs, I present the very brief scraps of information which I obtained concerning the dances of the second stratum, the series introduced from the north.

Dape Dance.—The coyote dance was performed at Auburn before the introductions by Yoktco. The Auburn informant Jim Dick said it was a dance from the north, and in no way associated with the *kuksui* dance.

The clown was also called *dape* (coyote). He might appear in almost any dance. It would probably be as correct to call the *dape payo* the "clown" dance as the "coyote" dance.

*Kamin*²⁶ *Dance*.—Apparently this dance might be performed without

²⁵ Jesse D., the Camino informant, an elderly man whose parents both hailed from Michigan Bar, although he was born at Latrobe, stated that he became a dancer in his early manhood after he had married, but with the death of his fellow dancers had ceased to dance. He stated that he was drum major (*howapbe*) for the *luhuyi* dance. He also danced in the *kamin*, *yomuse*, and *yohohanup* dances. The informant had seen the Miwok dance called *aletu* at West Point in Northern Miwok territory, but did not know of its being danced by the Southern Maidu.

²⁶ In Northwestern Maidu *kamini* means "dance"; in Yokuts *ka'm* means "dance." Cf. Roland B. Dixon and A. L. Kroeber, *Linguistic Families of California*, Univ. Calif. Publ. Am. Arch. Ethn., xvi, 61, 1919.

feather regalia, for the Shingle Springs informant spoke of seeing it at Latrobe "with feathers," thus implying that on some occasions it was danced without feathers. Faye describes this dance briefly.²⁷ Powers²⁸ reports it from the Southern Maidu immediately south of the Bear river. In this dance an old man who arises at one stage and rubs sweat from one of the dancers is paid by him for the service. This act is also performed in the *yomuse* dance of this stratum and in the *lumenwo* dance of the earliest stratum. The *kamin* is reported from Camino and Latrobe, El Dorado county, from Michigan Bar, Sacramento county, and from Auburn, Placer county.

Lole Dance.—A description of the *lole* dance is given by Faye²⁹ for the Southern Maidu and by Dixon³⁰ for the Northwestern Maidu, among whom it is called *loli*.

This dance has the remarkable history among the Southern Maidu of having been introduced twice; first from the north, second from the south by the teacher Yoktco about 1872. How long a period separates the two introductions I have no idea. Besides occurring among the Northwestern Maidu, this dance is reported by Powers³¹ from the northerly Southern Maidu. He speaks of it as an indoor winter dance.

This dance was seen by the Camino informant at Lula near Latrobe. Both men and women danced it, the women wearing long ear pendants called *howotu*, which reached to the breast. In this dance the body was twisted sidewise. The Shingle Springs informant saw this dance performed at Latrobe (perhaps Lula) by Latrobe dancers, mostly women, but some men. It is also reported from Michigan Bar, Sacramento county, and Auburn, Placer county.

Miss Gayton reports this dance from Goduma village near Sacramento. It was characterized by the use of a long feather rope, held by a number of women, each of whom had a whistle. There were two men on each side, the dancers apparently being in two companies. It was danced for four nights and was followed by a bath in the river. Meat, salt, fish, and grubs were tabu to the dancers, presumably during the four days of the ceremony.

Luhuyi Dance.—The *luhuyi* dance was designated as a dance of the Colfax region by the Shingle Springs woman informant. It was also danced at Latrobe and Michigan Bar. Henry Charlton, a singer for dances, said that the *luhuyi* was a native dance of the Auburn region, which is confirmatory of the attribution to Colfax which is not far from Auburn. It was danced at Camino, El Dorado county, by Miwok dancers from Ione, who on the same occasion danced *tulu*. It appears to have been a favorite with Auburn dancers. It was also danced at Goduma near Sacramento, if the name *luhii* recorded by Miss Gayton is the same as *luhuyi*. The following is Miss Gayton's description of it there.

Men and women participated. The women wore woodpecker scalp belts, beads, and abalone ornaments. The men wore flicker feather bands and

²⁷ *Op. cit.*, 50.

²⁸ *Op. cit.*, 324.

²⁹ *Op. cit.*, 48.

³⁰ *Op. cit.*, 291.

³¹ *Op. cit.*, 324, 325.

down caps, with a flicker feather ornament on each side. Long feather "skirts" were worn. In the ears were "button" shaped "earrings" ornamented with flicker and quail feathers.

So far as name goes this dance would seem to be the analogue of the Northwestern Maidu *luyi*, from which it differs, however, in the use of feather ornaments which are lacking in the Northwestern Maidu performance.³²

Omwulu Dance.—This dance, of which I obtained no description, was practised at Auburn.

Wulu Dance.—This dance is likewise reported only from Auburn.

Yomuse Dance.—The dancer in the *yomuse* dance, according to the Camino informant, has red or black stripes painted diagonally across the front of his body. Red horizontal stripes are painted on his legs and arms. The *yomuse* is called the "war dance" by the whites, apparently because men and women dance with bows and arrows around the fire in the dance house (*kum*). This dance is reputed to have been introduced twice, once from the north and once from the south. Powers,³⁴ visiting the Southern Maidu of the Bear River region in the seventies, reports the "*yomussi*" as an open air dance.

This name was recorded by me in a number of forms, apparently indicating obscure vowels. I wrote it, in addition to the above rendering, as *yamazip*, *yomozip*, and *yomuze*. Powers records it as *yomussi*.³³ One informant identified the *yomuse* with the shamans' dance called *lilik*, which seems to be a misidentification. On the other hand the similarity of the names recorded for the dance (*yomuse*, *yomuze*, *yomozip*, *yamazip*) to the names recorded for sucking shamans (*yomin*, *yomuzu*, *yomuse*, *yumizi*) certainly suggests the same stem and a shamanistic origin for the dance. Moreover, the suggestion is strengthened by the use of the cocoon rattle, which in central California is a characteristic instrument of shamans (see also the *yohohanup* dance).

In this dance an old man, who arises at one stage and rubs sweat from one of the dancers is paid by him for the service. This act is performed also in the *kamin* dance of this stratum and in the *lumenwo* dance of the earliest stratum. The *yomuse* was danced at Camino, Latrobe, and Michigan Bar.

INDIGENOUS DANCES

Five dances were named which were said to have been indigenous to the Southern Maidu and for which informants could attribute no foreign origin, either northern or southern. These dances were the *bu* or skunk dance, *lumenwo* dance, *weda* dance, *wetem* dance, and *yohohanup* dance. Of these the *weda* was an out-of-doors affair and probably should be considered as not belonging to the God-impersonating series. The other dances were

³² Dixon, *op. cit.*, 291.

³³ *Op. cit.*, 324.

³⁴ *Op. cit.*, 324.

apparently held within the dance house and to the accompaniment of the foot-drum. The *bu* or skunk dance and the *lumenwo* dance, which apparently is the equivalent of the creeper dance among the Northwestern Maidu and the Miwok, are both of the same character as the coyote and other spirit-impersonating dances.

The general religious and social setting of these dances of the earliest series cannot be distinguished from that of the dances of the second or northern series. This matter is discussed under the captions of Shamanistic Setting and Social Setting.

The very brief descriptive notes I gathered concerning these dances are included in the following paragraphs.³⁵

Bu Dance.—In the *bu* or skunk dance (*bupaiyo*) the fists and arms are moved as when the animal digs, which produces much laughter in the audience. The dancers have white paint down the back, apparently in imitation of the markings of the animal. The dance is reported from Latrobe and Michigan Bar.

Lumenwo Dance.—The *lumenwo* is described as a performance in which the dancer, who is marked with charcoal, jumps upon one of the dance house posts, hanging head downward. He then slides down the post. It was danced at Brela, Latrobe, and Michigan Bar. By the informant Henry Charlton it was identified with the *wokile*, a Miwok dance. In this dance an old man who arises at one stage and rubs the sweat from one of the dancers is paid by him for the service. This act is also performed in the *kamin* and *yomuse* dances of the second stratum.

Weda Dance.—Exact details of this dance were not obtained, but it seems that the dancers wore wreaths (*wotut*) of wild flowers and that it was danced in front of the houses in the village, not in the dance house. It might be termed the begging dance. A company of dancers would go from house to house, one carrying a basket. Each family contributed food. When the basket was full the dancers divided the contents among themselves. This seeking of food donations was done by visiting dancers as well as the dancers of the host village. This performance took place in the spring when wild flowers were blooming.

The *weda* was said to be an Auburn dance, and not a Latrobe dance. Dixon describes³⁶ a spring ceremony among the Northeastern Maidu called *wedaboyem*, the date for which is determined "by the relative advance of the

³⁵ The Camino informant described two performers who perhaps were connected with the earliest stratum of dances, though with what dances I could not learn. (1) *Otneke* was described as a dancer, or perhaps a drummer, who moved his shoulders back and forth, holding his elbows at his sides. His feet were lifted very high as he danced. (2) *Bonuki* was a dancer, perhaps a clown, decorated with red, black, and white paint.

³⁶ *Op. cit.*, 318.

trees and flowers, for all must be green and budding when the dance is held." Another Northeastern Maidu ceremony, often held when the *wedaboyem* takes place is known as the *kaudom sokondom*. It is characterized like the Southern Maidu *weda* by the seeking for donations of food. The *weda* and *kauda* are mentioned by Powers³⁷ as Southern Maidu dances in the region immediately south of the Bear river. Powers characterizes the *weda* ceremony as an out-of-doors affair which is divided into three parts, the *han-pawaho*, the *kauda*, and the *weda*. Apparently Powers' *kauda* is the same as the Northeastern Maidu *kaudom sokondom*.³⁸

The *weda* was apparently an ancient and widespread Maidu ceremony, but hardly to be called god-impersonating.

Wetem Dance.—The *wetem* was an Auburn dance of olden times which the informant Jim Dick had never seen. He said it was called a "war dance" and that it was danced with bows and arrows.

Yohohanup Dance.—This dance was said to have been danced at Camino, Latrobe, and Michigan Bar. The dancer carries a whistle (*toka*), and either he or the singer uses a cocoon rattle. The Auburn informant Jim Dick said it was not a dance at all, but the name given the singing for the *yomuse* dance.

FURTHER DETAILS ABOUT SOUTHERN MAIDU CEREMONIES

In the following pages are given details about the various dances which do not readily fit into the preceding discussion, yet which should be recorded for their value as to localization, individual participation, and details as to paraphernalia.

CEREMONIAL GATHERINGS

In English, the Southern Maidu, like their central Californian neighbors, call a ceremonial gathering a "big time." In the Shingle Springs and Camino region the native term is *lumai*. At Auburn it is *nemusla*. Both of these terms denote a gathering in which people from a distance come. A local gathering is called *huslak*.

The Shingle Springs informant said that the last *lumai* which he attended was at Camino about 1893. Two groups of dancers performed, one composed of Northern Miwok from Ione, the other composed of Southern Maidu from Auburn and Colfax. These groups alternated their performances. On this occasion Jesse D., Sam Kesley, and two or three others decided to give the "big time" even though there was no chief at Camino at this time. They danced all night for three nights. The Ione people

³⁷ *Op. cit.*, 324.

³⁸ Dixon, *op. cit.*, 318.

(Northern Miwok) danced *luhuyi* and *tula*. The Auburn-Colfax people danced *kuksui*.

About ten years earlier (1883 ?) the Shingle Springs informant saw a *lumai* ("big time") at what is now Dugan's place, near Latrobe. *Lilik*, the shamans' dance, was performed on that occasion for one day. The other two days of the three were spent in feasting and playing hand-games.

The same informant had attended several *lumai* at Auburn, usually in spring when the wild flowers bloomed. There they danced *kamin* chiefly.

Women attended all dances, according to the Shingle Springs informant. Children did not, because they became frightened. According to Henry Charlton women participated in many dances and were allowed to witness all. It must be borne in mind, however, that Charlton has been much with the Northern Miwok of Ione, so that this statement probably reflects Miwok custom as well as Maidu. Jim Dick, the Auburn informant, said that women could attend all dances provided they were not menstruating at the time. In the valley region, according to Tom Cleanso, women as well as men participated in dances.

After a dance all dancers (or dancers and spectators ?) eat together following a short rest in the dance house. Among the Central Miwok it is the dancers who must eat together, the penalty for infringement of this rule being sickness.

The usual obscurity as to motives prevailed. According to the Shingle Springs informant, George Smith, people "danced for a good time." At Latrobe he said they sometimes danced when a plentiful crop of acorns appeared. Henry Charlton gave "fun" as the motive for dances. The *kamin* dance seems to be connected with the budding of plants.

DANCE CALENDAR

Kuksui, *lole*, and other dances are said to have been danced in summer, while hand games were played in winter when people assembled, according to the Camino informant.

According to the Shingle Springs informant, George Smith, dances at Latrobe took place chiefly in the spring when the weather was good. There was no dancing in the winter there, for it was

difficult to get people to come. Dancing also took place in the fall, but not to any great extent in the summer.

Henry Charlton said that dances might be held at any time of the year, at the wish of the chief.

Jim Dick, the Auburn informant, said that dances were performed in the winter and spring, sometimes in the summer also, usually when there was plenty of food for visitors.

Tom Cleanso, a Sacramento informant from the village of Goduma on the north bank of the American river, stated that dances were held at any season and, except in the summer, in the dance house. In summer, dances were held out of doors.

The above evidence seems to point to altitude as the factor in the presence or absence of winter dances. The mountain location of the villages like Camino and Latrobe may have militated against winter dances. Perhaps not only the rigors of winter, but also lack of food for many visitors and lack of ceremonial development were factors.

DANCE HOUSE

The Southern Maidu dance house is called *kum* as is the Northwestern Maidu. No account of its construction was obtained, but presumably it was built as Dixon and Faye describe.³⁹ The names of certain parts of the dance house are as follows: *pecip*, door; *pundok*, smoke hole; *dul*, drum. The common English name today for such a dance house is "sweathouse," though actually it is many times larger than a real sweat house. According to Henry Charlton this name of sweathouse came to be applied to the large structure because of the fire for drying which was built within, just after the earth covering was put on. Charlton was unfamiliar with the true sweathouse, which probably fell into disuse early.

Tom Cleanso, the Sacramento informant, contrasted the dance house and the sweat house by saying that the former would hold one hundred people and that women were admitted, while the latter would hold only ten or fifteen people and no women were admitted.

³⁹ Dixon, *op. cit.*, 172; Faye, *op. cit.*, 45.

DANCE PARAPHERNALIA

Perhaps the huge log drum placed over a pit at the rear of the circular dance house should be considered a part of the dance paraphernalia rather than one of the fixtures of the dance house. However, it is not removed as are the dance regalia. It remains in position over the pit which forms the resonance chamber, whether ceremonies are in progress or not. This foot-drum was reported at all of the Southern Maidu dance houses concerning which we have information, ranging from Goduma village in the valley near Sacramento to the villages in the mountains.

The Southern Maidu chief, like the Miwok, decided when the ceremony was to take place and sent out a knotted string called *pul* when inviting various villages to ceremonies. Each knot stood for a day intervening before the ceremony. Strings with sixteen to twenty knots were sent out. The recipient chief cut off a knot each morning until the time for departure to the place of the ceremony arrived.

The split stick clapper is used by the singers as an accompaniment to their dance songs on the occasion of ceremonies. It is called *wadada* and was probably of the usual central Californian type, though no example was seen.

The cocoon rattle (*wososo*) was not only the instrument par excellence of the shaman, but was also used in the *yomuse* and *yohohanup* dances, the former of which is perhaps connected with the shamans' dance known as *lilik*.

The whistle (*toka*), made of *antai*, a red-barked shrub which grows near creeks, was used in the *yohohanup* dance. It is about fifteen inches long with a hole in the side. It is blown from the end. No example was seen.

Whistles were made also of prairie falcon (*wekwek*) and sandhill crane bones, in the vicinity of Sacramento. The former were reputed to give the better notes. The latter are said to have been used in pairs and blown from the end. These whistles were in part filled with pine pitch.

The *palpal* was a feather ornament worn in the hair on the side of the head. It consisted of a stick with four diverging feathers at one end. It may be identical with the Miwok *sotcenai*.

No exact description was obtained of the feather headdress called *wolzo* which is worn in the *ta* dance.

Hikli is the name of the feather-covered net, perhaps best characterized as a cape, usually worn suspended from the shoulders or the buttocks. For an illustration of it, see Dixon, plate 40. The Southern Maidu *hikli* was made of the feathers of black birds, presumably crows.

Mundanikil was the name given a breech-clout worn by male dancers. Its exact nature and antiquity were not ascertained.

Wotut is a wreath of flowers worn by dancers in the *weda* dance in the spring when the wild flowers are blooming.

Eagle down is worn in the *tula* and *hiweyi* dances and charcoal utilized for the black markings in the *yomuse* and *lumenwo* dances.

Miss Gayton records from the Sacramento informant the use in that region of flicker feather bands by both men and women; and of woodpecker scalps on bands, on belts, and on a form of headdress worn by men. She also reports the former use there of black face paint for male dancers. Men wore their hair "braided" and used a net to hold it on the head. Hair pins made of sandhill crane bone were used. Earrings or ear plugs were worn by women dancers.

SHAMANISTIC SETTING

Under the caption of Shamanistic Setting, I shall discuss briefly the data which I gathered as to other phases of religion (chiefly shamanistic) among the Southern Maidu contemporaneous with the dances which have been discussed in the preceding pages. This religious setting may be regarded as the environment in which the first and second strata of dances were, so to speak imbedded, and upon which the third stratum of dances, that introduced about 1872, was superimposed.

SHAMANS

Prominent features of Southern Maidu religious activities contemporaneous with the dances of the two earlier series, and perpetuated after the introduction of the dances of the third series, were the various activities of shamans which manifested themselves in three important observances. These activities were the

initiation of boys who expected to become shamans, the contest of shamans, and the séance in which the spirits of the dead were conjured. I use the word "spirit" advisedly as the Southern Maidu distinguish between the visible ghost (*üzwüze* or *us*) and the invisible spirit (*gakil*). The latter is also at times called a devil. The *üzwüze* and *gakil* are not to be confused with the spirits that appear to the dance manager in connection with the dances of the third series. These spirits appear in dreams and are denoted by the term *nedi*. Although human in form they are regarded as different from the ghosts or spirits of recently deceased individuals.

The principal functions of the shaman among the Southern Maidu were the same as everywhere else in central California. The curing of disease by suction was his principal activity. In the hill country of the Southern Maidu region the sucking shaman was called *yomim*. In the valley he was called *yomüse*. The terms *yomuzu* and *yumizi* were also recorded. Such a sucking doctor might at times be accused of malevolent practices. There was, however, a special name applied to a shaman who was regarded as a habitual "poisoner." The term was *hosimum*.⁴⁰

From the close resemblance of the name of the *yomuse* dance to the word for shaman, it seems likely that the dance may be an outright performance by shamans, as one informant said. This probability is strengthened by the use of the cocoon rattle (the characteristic shaman's rattle in central California) in the dance.

As will appear later, the author regards shamanism as a not improbable source from which the God-impersonating cult developed. In addition to the linguistic evidence just cited, further linguistic evidence is to be noted in the use of the stem *yom*, as in *yombasi* (the term for a secret society preliminary initiate⁴¹ among the Northwestern Maidu) and *yomta* (the term for the head of the secret society among the Patwin and Pomo).⁴²

⁴⁰ John Powell, a Northern Miwok, was said by a Maidu informant to be one. His "poison medicine" was *wene*, presumably a plant.

⁴¹ Kroeber. Handbook, 372.

⁴² Edwin M. Loeb, *op. cit.*, 365.

SHAMAN'S INITIATION

Boys who were to become shamans were initiated by the established shamans. They were placed in pits with "medicine" and "killed" with a piece of "poison medicine" about half an inch long. With such "poison" a large stone a quarter of a mile distant could be lifted two feet, so it was believed. The initiates were able to handle red hot stones. Boys were also taken to the hills and nearly starved in making shamans of them. Although their relatives brought them food, this was taken from them by the shamans in charge and inferior food substituted.

It was customary to "fix" shamans so they could eat new fruits. This was done by other shamans pressing the body. This was done, however, at least by the Auburn people apparently, as by the Miwok, for all people, not just shamans alone.

SHAMANS' CONTEST

This is evidently the performance called by Faye the *lomusem payok*,⁴³ but called by my informants *lilik*. It is called *tuyuka* by the Northern Miwok. In this performance the dancers who are all shamans shoot one another with their "poison sticks," *sila*, doing so from a long distance. The "poison" is believed to be kept in oak balls from which it is taken when ready to be shot at someone. The shamans from each district form a party by themselves.

When shooting the shaman makes a hole in the ground with his heel, raising a little mound of earth by turning his heel in the soil. He takes the "poison" between the thumb and finger of his right hand. Then he points at his victim with his left hand, stooping and striking the pile of dust as he throws his poison with an underhand motion of his right arm. Sometimes the intended victim, if he is a good shaman, catches the "poison" as it flies towards him. The "poison sticks" have been dipped into strong "medicine" and they sometimes knock over even a "good doctor."

The visiting shamans, say from Lone, shoot at the party of local shamans, sometimes from a distance of four hundred or five

⁴³ *Op. cit.*, 46. For an account of the shamans' contest among the Northwestern Maidu, see Dixon, *op. cit.*, 272.

hundred yards. The local shamans dance with chests expanded and arms held back in a nearly horizontal position. When one is struck by a "poison stick" he sometimes falls prone and unconscious to the ground. If he is not attended by his shaman friends within half an hour he will die. The majority of victims get up without aid and spit out the "poison" which is laid on a rock. Sometimes there is an accumulation of "half a panful" of "poison sticks." The Shingle Springs informant claimed to have seen such an accumulation himself.

After shooting away their "poison" as they approach, the visiting shamans join the host shamans and dance around a fire out-of-doors. This performance is usually on a summer's day. They dance both to the right and to the left. At times people who are not shamans participate in this dance, but they have to be "careful."

Sometimes a stout stick is driven into the ground and shot at with the "poison sticks." A weak shaman will knock only a little off of the top with his "poison," a powerful shaman will break off a good deal or knock the stick over completely.

SÉANCES

Certain shamans were reputed to be able to talk directly with the spirits whenever they wanted advice as to what people should do.

Séances were not uncommon.⁴⁴ A cocoon rattle was used in this operation and *gakil*, the spirits of the dead, were conjured. The séance took place at night. The interior of the dance house (*kum*) was without a fire, and dark. For five or ten minutes the shaman shook his cocoon rattle (*wososa*). Then a roaring sound was heard outside, at which the shaman lay down and ceased shaking his rattle. After a few minutes the spirit arrived, picked up the rattle, shook it a little, and mumbled. The spirit told the assembled people what was happening at the place he came from; he also told them to be kind to one another; and he would foretell whether the acorn and other crops would be good. The spirit

⁴⁴ At Auburn Captain John (Indian name Oite) was a shaman who conjured spirits.

would discourse thus for half an hour, then drop the rattle, and depart with the same roaring sound with which he arrived. Several spirits would come in the course of one evening's performance. Sometimes a coyote spirit came. It was recognized afar by its howling. Then everyone would make a peculiar sound with his mouth, blowing vociferously. This would drive off the coyote spirit.

Two Miwok men from Ione came to Auburn on the occasion of a séance which the Shingle Springs informant attended. A man had been murdered at Ione, but the Ione men forgot to tell the Auburn people about it. However, the murdered man's spirit came and told about it. The two Ione men did not attend the séance, but slept outside of the dance house. One man was awakened by the noise in the dance house and tried to arouse his companion. He shook him in vain, for he was as one dead. His spirit had gone to the meeting but later returned. It is obvious from this account that the Southern Maidu believe that the spirits of the living as well as the dead may travel at will.

The Shingle Springs informant knew of no séances at Latrobe or Camino. Powers⁴⁵ describes a Southern Maidu séance, which appears really to have been an impersonation. I think this instance is of importance as showing how the God-impersonating cult might gradually have developed from such shamanistic performances.

GODS AND SPIRITS

The Kuksu or God-impersonating religion, as its name implies, is one in which nature spirits and human spirits are impersonated. It is therefore of interest to note what particular spirits were recognized by the Southern Maidu. I have already dwelt upon their discrimination between the human ghost and the human spirit, the former visible, the latter invisible. A third class of spirits allied to these, since they are believed to represent long dead human beings, is the *nedi* of which I have spoken in connection with the third stratum of dances. As with that stratum of dances, it seems likely that the *nedi* spirits represent a new and

⁴⁵ *Op. cit.*, 326. For séances among the Northwestern Maidu, see Dixon, *op. cit.*, 271.

recently introduced concept among the Southern Maidu, a concept which appears to be related to that of the Ghost Dance cult among the Pomo, where the priest sees in his dreams the dance spirits, just as the *temaya* or dance manager does among the Southern Maidu. That the Southern Maidu concept is to be regarded also as a manifestation of the Ghost Dance religion I have already stated.

There are, however, certain nature spirits for which no generic term was obtained. These seem to be regarded as never having been embodied in a mortal human frame, although they are evidently conceived of as being human or part human in form. I learnt of but two such nature spirits, the wood spirit Kuksu and a water sprite called Unai. Unai is described as part human baby and part fish in appearance, and as crying like a baby. Perhaps it is allied to the Plateau Shoshonean "water baby" (*paxwa*).⁴⁵

The Shingle Springs informant, George Smith, had never seen the sylvan spirit Kuksu, but he knew of an old man who lived near Dugan, El Dorado county, who occasionally saw one in that vicinity. Whenever he saw it, blood came from his mouth. The *kuksui* dancer is said to dress like the "wild" *kuksu* but has no connection with him.

The great horned owl (*humhum*) although apparently not classed as a supernatural being is reputed to carry away babies at times. A story runs to the effect that a baby thus carried away lived for a week in the owl's nest.

MANUFACTURE AND CARE OF DANCE REGALIA

The following notes on the manufacture and care of dance regalia undoubtedly refer to dances of both the third stratum and the two earlier strata. They show the great extent to which the shaman was concerned with the God-impersonating cult. Without the intervention of the shaman, god-impersonation, according to native belief, would be an impossibility, as will be clear when the shaman's function in that connection is discussed in the succeeding paragraphs. This function of the shaman in connection with god-impersonation seems to be lacking or but weakly developed

⁴⁵ E. W. Gifford. *Western Mono Myths*, Jour. Amer. Folk-Lore, xxxvi, 304, 1923.

or unrecorded among the Pomo, Patwin, and Northwestern Maidu. It is, however, an important feature among the Sierra Miwok as well as the Southern Maidu and should perhaps be regarded as a fundamental feature of the two earlier strata of dances, among the Southern Maidu, which was carried over to the third series of dances introduced by Yoktco.

As with the Sierra Miwok the feathers that are used in dance regalia are sacred. The Auburn informant explained this, so far as eagle feathers were concerned, upon the basis that the eagle is a great and sacred "chief" and that therefore its feathers and down are sacred and the dancer who wears them must be treated as carefully as the eagle would be treated. The special "poisoning" treatment of the feathers of dance regalia, which made the regalia dangerous to non-dancers, however, may have been the chief factor in the matter of "sanctity," rather than any inherent sacredness attaching to the birds whose feathers were used.

Feather aprons (*hikli*) and other dance regalia were made out of doors. It was believed that young children would die if these objects were made inside the house. After an object was completed it was "poisoned" by a shaman. "Poisoning" presumably consisted in sprinkling certain pulverized or masticated roots over the objects as is done by the Central Miwok. Such "poisoned" dance regalia were not kept in the dwelling house but in the hills, being in the custody of a shaman. One informant gave as the motive for "poisoning" the desire to make the objects untouchable to ordinary Indians.

When the regalia are to be used they are turned over to the head dancer by the shaman who has had them in charge. He "doctors" the head dancer so he can safely handle the regalia. In the same way each dancer who is to wear feather objects must be "doctored." The treatment consists of the shaman blowing on each person so that he will not be "touchy" and jerk back when the feather ornaments are put on. Even a woman, when picking up another's child blows on it first for the same reason. The shaman also puts wormwood in a short tube made of a hollow root (not a tobacco pipe). He inserts a live coal and then moves the tube over the dancer's body, head, arms, and legs, so that the

smoke comes in contact with him. Without this precautionary measure, it is believed that the "poisoned" feathers would make the dancer sick.

A non-dancer must not touch the person of a dancer or his feather regalia. To do so might make the non-dancer ill or make the dancer weak.

Professor Kroeber informs me that the regalia of the Hesi cult were sacred and untouched among the Patwin anciently, but that in the modified form of the cult now practised they may be donned by anyone without fear of sickness resulting. This reversal of feeling is due to Ghost Dance religion influence. Among the Southern Maidu and Sierra Miwok the Ghost Dance religion effected no such change. The feather regalia are still feared and venerated and, among the Northern Miwok at least, are the objects of seed offerings.

SOCIAL SETTING

There were no moieties among the Southern Maidu so far as could be learned, though the neighboring Northern Miwok have totemic moieties. Therefore, the matter of special moiety paint patterns for certain dancers does not enter into ceremonial affairs. Apparently the social and political organization of the Southern Maidu was similar to that of north central California in general, the village community being the political unit, and being without sibs.

A brief presentation of the data concerning villages and chiefs follows because of its value as an aid to understanding the God-impersonating cult.

CHIEFTAINSHIP

The Southern Maidu chief is called *huk*,⁴⁷ the same term as used by the Northwestern Maidu. Unlike the Northwestern Maidu official of the same name, the Southern Maidu chief was an hereditary official, who selected his own successor. The shaman is said to have had nothing to do with this, but the people ratified the old chief's choice. The chief's sons were called *huk* and the

⁴⁷ A single informant at Camino gave the term *anakalde*, evidently Spanish *alcalde*.

oldest usually succeeded his father. Sometimes a daughter became chiefess if she were considerably older than her brothers. Among the Southern Maidu, such a woman chief bore the title of *mayen* (cf. Miwok *mayengo*, Costanoan *mayin*). There are said to have been two such chiefesses at Nashville, El Dorado county. The Southern Maidu female chiefs who bore this title were either wives or daughters of chiefs. Such a chiefess functioned when the chief died without a male heir. She gave ceremonies like a male chief.

In these aspects Southern Maidu chieftainship resembled the institution among the neighboring Miwok rather than among the Northwestern Maidu. Chiefs regulated the gathering of wild food, so that inhabitants of villages would not fight one another.

Among the Northwestern Maidu, according to Dixon⁴⁸ the village chief apparently did not function as the head of the secret society which produced the elaborate ceremonies of the God-impersonating religion, while among the Southern Maidu, as among the Miwok, the chief is the person who sets the time for and supervises the arrangements for the ceremonies, there being no secret society so far as I could learn and as Powers reports.⁴⁹ The chief orders the people to prepare the necessary food and is said to have been "boss over the dancers," calling the dancers and singers together. In short, in the south the chief is both a civil and ceremonial official, in the north he is the former only.

Although the chief (*huk*) issues the call for and supervises ceremonies, he does not dance. It is incumbent upon him to feed the visitors, which he does by commandeering the services and supplies of his people. His wife, the *mayen*, assigns to women of the village the duties of pounding acorns, making soup, and so forth.⁵⁰

⁴⁸ Roland B. Dixon, *op. cit.*, 223, 224, 322 ff., 1905.

⁴⁹ *Op. cit.*, 326.

⁵⁰ Former Southern Maidu chiefs were:

(1) Koloma Charlie who was chief at Shingle Springs, or at a village site about two miles from Shingle Springs, where there was a dance house and where dances were held during the girlhood of one informant, probably about 1870.

(2) The father of Hattie Thomas of Camino was formerly chief at Pakantii at Camino. Hattie said that he was made chief by the people because they liked him. Hattie was *mayen* (chiefess) when her father was alive.

VILLAGES

Hüpüw, literally "houses," was the word obtained for village. This term was equated to the Northern Miwok term *nenasü*, which means the patrilineal ancestral home. Apparently, however, *hüpüw* has not this last meaning exclusively in Southern Maidu, for the informant said that *hüpüw* meant the village of one's birth and that this might vary with different children in the same family. The *hüpüw* of the informant, Henry Charlton, of his father, and of his mother, was the village of Yule, at Pokerville, near Plymouth, Amador county, close to the Maidu-Miwok boundary.

Although a number of villages, perhaps for a distance of twenty miles, spoke the same sub-dialect, each village was politically independent and there was no chief over all.

Near the foothills rises of natural ground were selected for sites. Along the lower courses of the rivers, village sites like that at Slough House, Sacramento county, on the Cosumnes river, were artificial mounds⁵¹ which were heaped up to form a sufficient elevation to preserve the huts from flood waters. The earth for such a mound was carried in baskets on the heads of villagers and dumped in the appropriate spot to form the village site. Proximity to food supply influenced the selection of the site and prompted the laborious process of mound building. In the case of the mound which I examined it was said that the abundance of oak trees and the proximity of the affluent Deer creek influenced the selection. It is said that the building up of such a small mound took about a week and that all of the men and women of the community participated in the work. Such a site is said to have been occupied the year around, winter and summer. The particular one which I refer to at Slough House was occupied by Southern Maidu, speaking the same sub-dialect as the informant.

(3) Helu, chief of Yule; also chief of Homit, probably later. Helu succeeded while his father was alive because of the latter's advanced age ("115 years"), the father dying about 1880.

(4) The father of Helu, chief of Yule.

(5) Motos or Charlie, chief of Palama. Died ca. 1880.

⁵¹ Cf. Powers, *op. cit.*, 316.

House flies were anciently scarce at such sites. Their abundance now is attributed to domestic animals.

In pre-American days the river at high water spread far and wide over the low lands, as there were no levees to restrain it. The informant estimated that the villages were two or three miles apart. At the time of flood water, people waded and swam from one village to another or else traveled on logs lashed together as a raft. It is said that no dugout canoes or tule balsas were used. Tule, however, was used for house thatch.⁵²

CONCLUSIONS

The absence of rigid localization of dances such as prevailed in northwestern California and the custom of dancers from one locality presenting their dances elsewhere must have been great aids to the diffusion of dances. That dances were thus exhibited away from home in ancient times we cannot be certain. Since the coming of the white man, however, it has been a common custom, which makes it seem likely that such may have been the practice anciently as well. A notable example of modern display of dances away from home took place about 1883 when the Northwestern Maidu dances *hesi*, *salalu*, and *yokola* were performed at Colfax by dancers from Chico. In this particular case they were not adopted by the Southern Maidu among whom they were displayed, but in the preceding pages I have given a number of

⁵² Villages mentioned by informants:

(1) Homit, about four miles north of Ione, Amador county. Last large village after coming of whites. Said to have been at border of Maidu and Miwok territory. Site of village owned by white man named Grant, later by a cattle company.

(2) Palama, at Forest Home, Amador county, on land now owned by white man named True.

(3) Yule, at Pokerville, near Plymouth, Amador county, on land owned by white man named Tom Pender. According to Kroeber (*op cit.*, 394) this village was Miwok, not maidu.

Villages 1, 2, 3 were said to lie in a region called Wahap, which one informant gave as his "tribal" name.

(4) Pakantii, at Camino, El Dorado county. Probably at the highest altitude of any Southern Maidu village, and likely to have been only a camp site anciently.

(5) A village on property of Jack Johnson, near Brela, El Dorado county. Dance house there, as *lumenwo* danced.

(6) Lula, near Dugan, El Dorado county.

instances of adoption of new dances, notably those from Pleasanton. In the case of the Pleasanton dances there would seem to have been a factor present that was probably lacking when the Chico dances were shown at Colfax. The factor I refer to is that of the missionary teachings of the Ghost Dance religion as to efficacy of the dances to bring about certain desirable results, such as longevity.

It would appear that the stock of dances in the Southern Maidu foothill region was scanty before the appearance of the teacher Yoktco in the seventies of the last century, and comprised at the most the *bu*, *dape*, *kamin*, *lole*, *luhuyi*, *lumenwo*, *weda*, *wetem*, *wulu*, *om wulu*, *yomuse*, and *yohohanup*. Of these the *dape*, *kamin*, *lole*, *luhuyi*, *wulu*, *om wulu*, and *yomuse* were attributed to a northern origin antedating the time of Yoktco's teachings. This would leave as an underlying substratum, unattributed to any other region, the *bu*, *lumenwo*, *weda*, *wetem*, and *yohohanup*. Of these the *weda* was not performed in the dance house and apparently did not belong to the God-impersonating Cult system.

Dixon writes of the northwestern Maidu dances in the vicinity of Chico in the Sacramento valley that "a large part of the whole dance series was obtained directly from the Wintun (i.e., Patwin) Indians by the Maidu."⁵³ Unfortunately he does not indicate which dances were borrowed from the Patwin and which formed the original native stratum. Kroeber,⁵⁴ from Patwin sources, lists *k'aima*, *toto*, *lole*, and *keni* as dances borrowed by the Northwestern Maidu of Chico from the Patwin.

A similar stratification of dances is found among the Northern and Central Miwok, where a small series constitutes the earlier stratum of the foothill region. The later stratum which apparently was introduced from the west about 1872 consisted of much the same dances as were introduced into the Southern Maidu region at the same time. The stimulus behind this missionary movement was doubtless the Ghost Dance movement of the seventies. Whether such was also the case with the introductions among the Northwestern Maidu Dixon fails to indicate.

⁵³ *Op. cit.*, 288, see also 308.

⁵⁴ Handbook, 385.

Kroeber,⁵⁵ upon the assumption that such dances as the *kuksuyu*, *lolo*, and *hiwei* were ancient among the Miwok, states that the Miwok, and apparently the Costanoan and Salinan stocks, seem to have participated rather in the Pomo (Non-Hesi) than in the Patwin (Hesi) form of the ritual. More recent information, which I have obtained, indicates these dances to have been introduced among the Miwok presumably about 1872. This being the case, his conclusion would require modification as follows: That the dances introduced among the Miwok in recent times, and probably as a result of the Ghost Dance movement, were of the Pomo (Non-Hesi) rather than the Patwin (Hesi) type. The same statement holds also for the Southern Maidu. It obviously does not hold for the Northwestern Maidu who received the Patwin or Hesi form of the cult.

It seems likely that we are dealing with two great developments in the Hesi (Patwin) and Non-Hesi (Pomo) rituals, both based on a single widespread foundation. The foundation perhaps is represented by the underlying stratum of locally varied dances found in the Sierra Nevada foothill region from the Northwestern Maidu to the Southern Miwok and by the simple form of the cult found among the Yuki, coast Pomo, and Coast Miwok. While these simpler manifestations of the cult continued to flourish in these peripheral regions there were developing two areas of specialization and complexity, namely the Patwin and the inland Pomo, as we shall call them for convenience. The exact area occupied by the Pomo (Non-Hesi) type of the cult is difficult to define, but it is possible that it extended as far south in the Coast Range as the Salinan territory. However, this extreme southern extension is more likely to have been the result of a late spread rather than of an early development. In fact, it is not impossible that the spread of the Non-Hesi form of the cult to the mixed Yokuts, Plains Miwok, and Costanoans at Pleasanton, and to the Salinans, may have been more or less contemporaneous with its spread in the seventies to the Sierra Miwok and Southern Maidu. Only modern investigators have recorded the dances of the cult at Pleasanton in Costanoan territory and among the Salinans.

⁵⁵ Handbook, 381.

Although the probable spread of the Non-Hesi form of the cult to the Costanoan and Salinan peoples is involved in a certain amount of obscurity, its spread to the Southern Maidu and Sierra Miwok is somewhat clearer, it having reached those peoples apparently in the early seventies and through the medium of the Ghost Dance movement. Probably antedating, but perhaps in part coinciding with, this spread of the Non-Hesi form of the cult to the Southern Maidu and Sierra Miwok was the spread of the Hesi form to the Northwestern Maidu.

I would emphasize again that in the whole Maidu and Sierra Miwok region there was already existent a type of dances performed in the earth-covered dance house which formed good soil in which the highly evolved form of the Patwin (Hesi) and Pomo (Non-Hesi) readily took root. What these supposedly primitive dances were like among the Southern Maidu has been revealed so far as possible in this paper. What they were like among the Northwestern Maidu can be only conjectured. What they were like among the Sierra Miwok will be made clear with publication later of my manuscript notes. That a similar early and simple form of the God-impersonating cult prevailed in the Costanoan and Salinan regions is likely, but we have data only from the Salinans that apparently concern this matter; and moreover, the possibility, remote as it seems to me, should not be overlooked that the Costanoans rather than the Pomo may have evolved the so-called Non-Hesi type of the God-impersonating cult. The *kuksui*, *hiwei*, and *lolei* dances have been recorded as danced in former Costanoan territory by the mixed population of Plains Miwok, Yokuts, and Costanoans formerly of Mission San Jose⁵⁶ and by the Salinans formerly of Mission San Antonio.⁵⁷ In addition, among the Salinans there were practised dances which Mason speaks of as Owl, Deer, Coyote, and Bear. It seems entirely possible that these four dances represent an early stratum of dances of the God-impersonating type and that *kuksui*, *hiwei*, and *lolei* represent modern superimposed dances perhaps contemporaneous with the

⁵⁶ Author's notes.

⁵⁷ J. Alden Mason. The Ethnology of the Salinan Indians, Univ. Calif. Publ. Am. Arch. Ethn., x, 177-179, 1912; Kroeber, Handbook, 371.

later introductions among the Southern Maidu.⁵⁸ Mason mentions a dance house among the Salinans. Possibly it was introduced with the dances *kuksui*, *lolei*, and *hiwei*, but it seems more reasonable to believe, as suggested by Mason's context, that it was ancient and connected with the dances of the supposedly older stratum.

It would appear then that in pre-Caucasian times the God-impersonating Religion of central California was quite widespread and represented by a considerable series of local dances. That there was even then more or less diffusion of dances taking place is suggested by the reputed northern origin of certain of the Southern Maidu dances. But apparently the great influx of dances into the Maidu and Sierra Miwok regions, and perhaps to Pleasanton in former Costanoan territory and to San Antonio in former Salinan territory, took place only in Caucasian times and presumably about 1872. Identity of names for a number of dances among such diverse peoples would seem to argue recency for the spread of the dances. The great wave which carried such dances as *kuksui*, *hiwei*, *lolei*, and others into the Sierra Nevada foothills and perhaps to Pleasanton and San Antonio appears merely to have superimposed upon an older stratum of dances a new stratum of the same general God-impersonating type as the older, but modified by the leaven of the Ghost Dance Religion.

It is possible that the element of dreaming which appears so prominently in connection with Yoktco among the Southern Maidu was new, but of this there is no certainty, since nothing is known as to whether or not dreams played a part in the older stratum of dances. However, the dreaming on the part of the *temaya* or dance director strongly suggests the similar phenomenon among the so-called *maru* priests of the Ghost Dance Cult among the Pomo.

The doubt as to the antiquity of the dreaming by the dance manager (*temaya*) among the Southern Maidu naturally has as a corollary doubt as to the antiquity of the Southern Maidu *nedi* dance spirits about which he dreams and suggests the possibility

⁵⁸ However, it should not be overlooked that Spanish travellers (notably Fages) in the eighteenth century were struck by the fact that women performed dances among the Salinans. Perhaps the *lolei*, a woman's dance, was what they witnessed. See Mason, *op. cit.*, 179.

again of 1872 Ghost Dance influence. As far south as Madera county an informant spontaneously informed me that the names of Southern Miwok dances were the names of dead people, exactly as did a Southern Maidu informant. If this concept is not connected with the 1872 Ghost Dance, then it seems likely that it is an ancient concept that characterized the God-impersonating cult. Ghost impersonations were a marked feature of the old cult among the Pomo.

The relation of shamanism to the God-impersonating cult is an important matter bearing upon the possible origin of the cult. Among the Southern Maidu, and of course among other groups as well, it appears to me that there are such connections between shamanism and the activities of the cult as to suggest that the latter may have arisen from the former. The features I refer to are (1) the "poisoning" of dance regalia by a shaman; (2) the necessity of a shaman's aid in donning the regalia; (3) the fact that a shaman cares for the regalia when not in use; (4) the probable identity in part of shamans' guardian spirits and spirits impersonated in dances; (5) the overlapping of the practices of spirit-impersonation and spirit-conjuration; (6) the parallel purposes of some shamanism and of some dances as exemplified in (a) curing, (b) insuring abundant food; (7) the apparent derivation from a single stem of certain shamanistic and secret society designations.⁵⁹

That it is justifiable to speak of the Southern Maidu dancers as forming a "secret society" I very much doubt. Powers, who was familiar with the Northwestern Maidu secret society, says there was none among the Southern Maidu.⁶⁰ On the basis of the evidence presented in this paper the term "secret society" hardly seems warranted. It would appear, however, that the introduction of new dances by the teacher Yoktco, even though due to Ghost Dance stimulus, brought with it a definite custom of confinement and instruction for the young prospective dancers and singers which hitherto had not been practised, or practised but half-heartedly, in the earlier strata of dances.

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⁵⁹ See page 243.

⁶⁰ *Op. cit.*, 326.

PREHISTORIC INHABITANTS OF CRAWFORD COUNTY, KANSAS

BY VERNON C. ALLISON AND VANCE RANDOLPH

PREHISTORIC artifacts are not particularly abundant in southeastern Kansas but those found offer interesting and convincing evidence of a long occupancy before the coming of the white man. The collection of Mr. Andrew M. Brooks of Pittsburg is, as far as we know, the most extensive and complete ever made in this locality. This material has never been properly labelled or described, and, as these small private collections are subject to many hazards and vicissitudes, it seems worth while to make some permanent record of Mr. Brooks' work here. It will be very gratifying to the authors if this paper should arouse further local interest in the matter and stimulate future research.

The Brooks collection comprises some eight hundred pieces altogether, including metates and pestles, broken pottery, double-bitted axes or hoes, knives, spear heads, drills, scrapers, and a great number of arrow points. These objects were all picked up on the surface within four or five miles of Pittsburgh, some of them being found within the present corporate limits. The most favorable time to look for flint artifacts is just after a shower, as the rain washes the dirt from the light-colored flints and renders them much easier to see.

One of the best hunting grounds for these flints is an area on South Broadway, near the former site of the famous Bucket-of-Blood saloon, and now used as a Catholic cemetery. A great many specimens, particularly the tiny bird-arrow points, have been picked up here. Another old village site is located in what is now Lincoln Park. A sandy corn field on the west bank of Cow Creek, four miles west of Pittsburg on the Fourth Street road, has yielded a great variety of artifacts. Another rich field lies about a mile upstream, on the east bank of the creek, just north of the Twentieth Street road. An ancient camp-ground of lesser importance has been found on the J. B. Smith farm just west of the

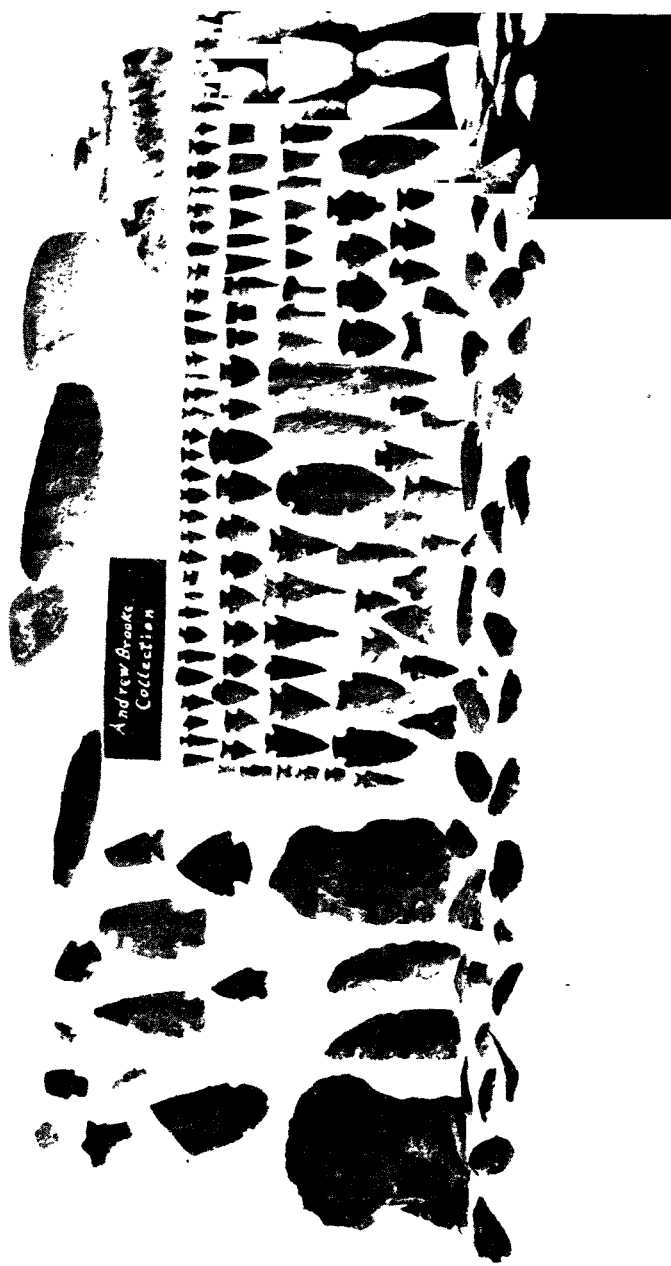


PLATE XXXIII.—The Andrew M. Brooks Collection of Indian objects from the Pittsburgh vicinity.



PLATE XXXIV.

city and south of the Quincy Street road. The early white settlers established a burying-ground on a small knoll at this place, and some of the crumbling head-stones may still be found; sunken graves here frequently reveal patches of red dirt, possibly old fire hearths. The present owners of the hill often plant corn upon the eastern slope toward a small swampy area lying between the knoll and the creek, and it is very probable that they are unwittingly following the example of their red predecessors. One interesting object picked up near this site resembles a broken double-bitted flint axe. About four hundred yards southeast of this knoll is a second village site located in a sharp bend of the creek, the open end of the bend facing the east. Another of the double-bitted axe-like specimens was found by Mr. Robert J. Ketterman on Lightning Creek, about one and one half miles north of the Fourth Street road; the creek is here running almost due west with a high northern bank, and the specimen was found upon the south side of the stream. Joseph B. Thoburn (Secretary Oklahoma State Historical Society and Curator of the State Archaeological Collection, Oklahoma City) points out, however, that these implements are never found with really keen edges, and suggests that they are probably not axes at all, but hoes used by people of Caddoan stock. The rough flint object at the right of Plate XXXIV was also found on Lightning Creek by Mr. Ketterman. It may represent a crude attempt at a Caddoan hoe or it may be an old flint core from which flakes were hammered to make arrow points, and so forth; it possesses a noticeable patina or polish and if this comes from long use, the artifact is a crude, early Caddoan hoe.

Thoburn, from the inspection of the photographs of the flint artifacts in Plate XXXIII, concludes that approximately three-fourths of the specimens are of Caddoan origin and the remaining twenty-five per cent Siouan (Osage). He draws this inference from the relative proportions of the two types of bird points, i.e., small flint points used on the projectiles thrown from blow-guns made of hollow reed or cane. The Siouan bird points are commonly triangular with no barbs or nicks near the base and even when they are nicked it is just slightly and rather farther from the base than in the same class of artifacts of the Caddoan culture.

The Siouan people have always, so far as known, used the small hide scrapers fastened to pieces of elk antler about eight inches long. The prehistoric Caddoan people did not so use the hide scrapers but the historic Caddoan people did fasten their hide scrapers to pieces of antler; the inference is that the Caddoan people borrowed this method from some other people within historic times.

Both Siouan and Caddoan people made pottery though the Caddoan far excelled the Siouan in this art. The fragments of crude black pottery shown in the upper right-hand corner of Plate XXXIII are probably of Siouan origin.

The two large crude flints in the lower left-hand corner of the same plate are undoubtedly Caddoan hoes, as is also the object at the left of Plate XXXIV. According to Thoburn the people of Siouan stock entered Oklahoma about four or five hundred years ago from the east and they displaced the people of Caddoan stock who had come in from the South four or five hundred years previously. The Caddoan people were preceded by an unknown people coming from the southwest who built mounds for ceremonial purposes (Iroquoian?). The same sequence observed in Oklahoma apparently holds good for Crawford County although the unknown people (Iroquoian?) probably came into only very transitory contact with this district as no mounds other than Siouan or Caddoan sepulchral or domiciliary mounds have been found west of extreme southeastern Kansas. Plate XXXIII shows several very crude points without notches or barbs, and these may represent still more remote cultures than those previously described.

Recent work^{1, 2, 3} on prehistoric dates and climatic conditions indicate that this part of Kansas was rather uninhabitable between 1226 B.C. and about 520 A.D. on account of a cool rainy period

¹ The Correlation of Time Units and Climatic Changes in the Peat Deposits of the United States and Europe. Alfred P. Dachnowski, *Proc. Nat. Acad. Science*, Vol. 8, No. 7, p. 225.

² Quaternic and Tertiary Chronology. Vernon C. Allison, *The Pan-American Geologist*, vol. XLII, No. 3, October, 1924, pp. 199-217.

³ The Antiquity of the Deposits in Jacob's Cavern. Vernon C. Allison, *Anthropological Papers of the American Museum of Natural History*, Vol. XIX, Part VI. pp. 297-335.

followed by a cold windy climate; since about 520 A.D. the climate has been substantially the same as at present. The period from 1226 B.C. to about 520 A.D. corresponds to the Lake Border Glaciation episode of North America, the Fini-Glacial of Scandinavia, and the Daun Glacial episode of the Alps. Another preceding uninhabitable period extended from 16,080 B.C. to about 12,000 B.C. (The Port Huron Glacial episode of North America, the Goti-Glacial of Scandinavia, and the Gschnitz Glacial episode of the Alps); the climatic conditions of the intervening period, from about 12,000 B.C. to 1226 B.C., were similar to those of today and thus southeastern Kansas was inhabitable. By using these climatic and chronological data together with Thoburn's estimate of the successive migrations since about 520 A.D., it is possible to construct an approximate prehistory for Crawford County, Kansas:

Inhabitants	Period
White Settlers	1800-1850 A.D. Onward
Siouan stock	1350 A.D. to 1800 A.D.
Caddoan stock	900 A.D. to 1350 A.D.
Iroquoian ?	520 A.D. to 900 A.D.
Sparsely Inhabited	1226 B.C. to 520 A.D.
Inhabitants ?	12000 B.C. to 1226 B.C.

BUREAU OF MINES,
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A PRIMITIVE PUEBLO CITY IN NEVADA

By M. R. HARRINGTON

THE fact is well known that at an early period agricultural tribes of Indians, building rather primitive houses but manufacturing pottery of Pueblo types, were widely scattered over the Southwest. But it is also true that comparatively little attention has been paid to them hitherto, perhaps because the remains of their relatively humble habitations seem so insignificant when compared with the spectacular cliff-dwellings and with the huge stone and adobe buildings left by Pueblo peoples in much later, but still prehistoric, times.

For this reason the work done during two seasons by the Museum of the American Indian, Heye Foundation, in cooperation with the State of Nevada, in the veritable city of adobe ruins and pit-dwellings near St. Thomas, Nevada, may prove of special interest; for it may shed some additional light on that remote period of Pueblo prehistory when the characteristic culture was just beginning to take form and Pueblo architecture was born.

The group of ruins has been officially named "Pueblo Grande de Nevada," but the press and the public at large prefer to call it the "Lost City," and under this name it now appears on the Union Pacific railroad maps.

The writer was in charge of this expedition, with Mr. C. O. Turbyfill, also of the Museum staff, as first assistant, and with Mr. Louis Schellbach, 3d., representing the State of Nevada. Among the others who rendered efficient service were Messrs. George and Willis Evans, father and son, from the Pit River tribe of northern California; Mr. Fay Perkins of Overton, Nevada, and Mr. Leslie Sanchee, a Zuni. Not only did Governor Scrugham and the State authorities in general exert themselves to assist us in every possible manner, but many of the neighboring ranchmen and other residents of the Moapa valley went out of their way to help us, and our thanks are due to all of them.

Pueblo Grande seems to have been the largest Puebloan settlement in the State of Nevada, but it is by no means the only one, for there are numerous similar though smaller house-groups scattered here and there along the Muddy and Virgin valleys, and reconnoissance has shown that remains of this kind are quite widely distributed in the eastern part of the state over an area approximately 250 miles long from north to south, and some 80 miles wide from east to west at the widest point thus far observed. To the southwest we have already traced the culture to within fifty miles of the California line, and strongly suspect that it will yet be found within the limits of that state.

Returning to Pueblo Grande, we find the traces of ancient dwellings scattered along the east side of Muddy river from a point just above its junction with the Virgin river northward for five or six miles. In the flat land of the valley many ruins have been destroyed by ranchers in leveling the ground for cultivation, but a large number still remain, for the greater part more or less buried under mound-like sand-dunes covered with a thick growth of scrub mesquite; and the eroded remains of other houses dot the tops of the low ridges lying between the valley proper and Mormon Mesa to the east. Whether in the valley or on the ridges, the houses are thickly scattered in some places, thinly in others. At the widest, the old settlement probably did not measure more than a mile; in most places much less. Forty-six of the houses have already been thoroughly, and a number more partially, explored; but this is but a small part of the total.

It was soon found that there had been several types of houses occupied by the same people, the most primitive of which was the *pit-dwelling* proper. This is a circular or oval pit, eight or ten feet across and three or four feet deep, with a floor of hard-beaten earth or of adobe, with the sides of the hole plastered with the same material and usually with a circular bowl-shape fireplace a little to one side of the center. In some of these, possibly the oldest, the walls above the ground level and the roof must have been made of poles covered with mats, or some other perishable stuff, for these pits contain nothing in the way of adobe, stone, or other fallen wall material.

Of more advanced type and more common here is the pit-dwelling with an encircling wall of adobe, or adobe and stone; the pit, in this case, yielding the remains of the fallen wall.

In some places there are isolated pit-dwellings, in others whole groups placed in a more or less haphazard way; in still others the pits were arranged in a row, side by side, with a little space between.

And it was from rows of pit-dwellings like this that true houses seem to have developed, when some enterprising pit-dweller conceived the brilliant idea that he might make a single party-wall answer for two adjoining pit-dwellings, simply by digging them close together and making the intervening wall straight instead of curved; but the true rectangular room seems to have come later. In most of the houses the rooms remain more like ovals cut straight across at the ends, than like rectangles—that is, the end walls only are straight, while the side walls remain curved to a greater or less extent, and the floors are still more or less sunken below the surface of the ground.

In such manner seems to have been derived the idea of a many-roomed house; from this it was but a step to the building of houses with truly rectangular rooms in rows with floors on the level of the outside ground—and such houses were already being built before Pueblo Grande was abandoned. Thus true Pueblo architecture was born, for the great three- or four-storied houses which characterize the climax of the culture represent merely a further development of the same idea.

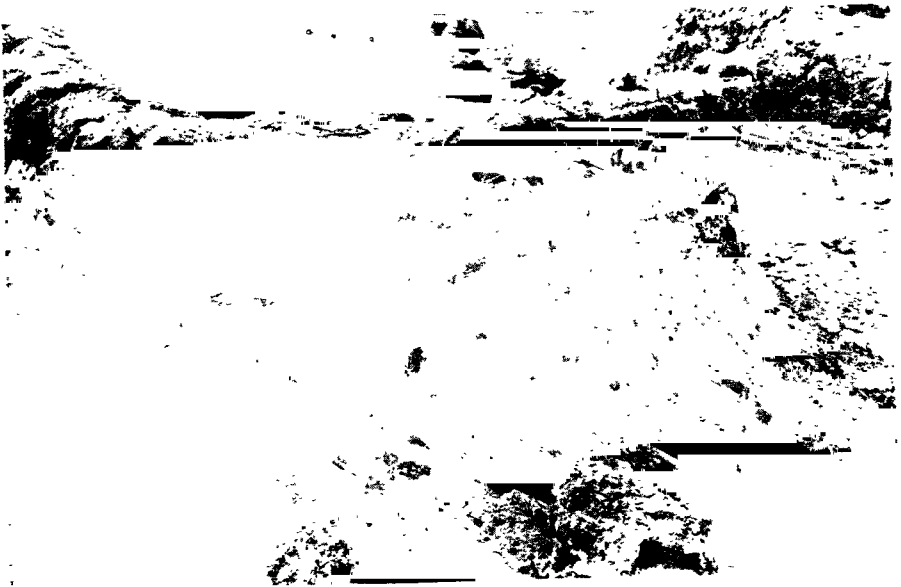
But even after this latest type of house was evolved, there were usually retained a few rooms of the old semi-underground style, a circular or oval, very likely in some cases as kivas for ceremonial purposes. That one at least was actually so used is suggested by the finding in it of fragments of painted sandstone slabs suggesting the altar tablets of modern Pueblo ritual.

The entrance to the original pit-dwelling was likely through a hatchway in the roof; but we found a number of examples in one of the more deeply buried and hence better preserved houses which showed small lateral doorways, in the portion of the wall projecting above the ground when the house was in use with

PLATE XXXV.

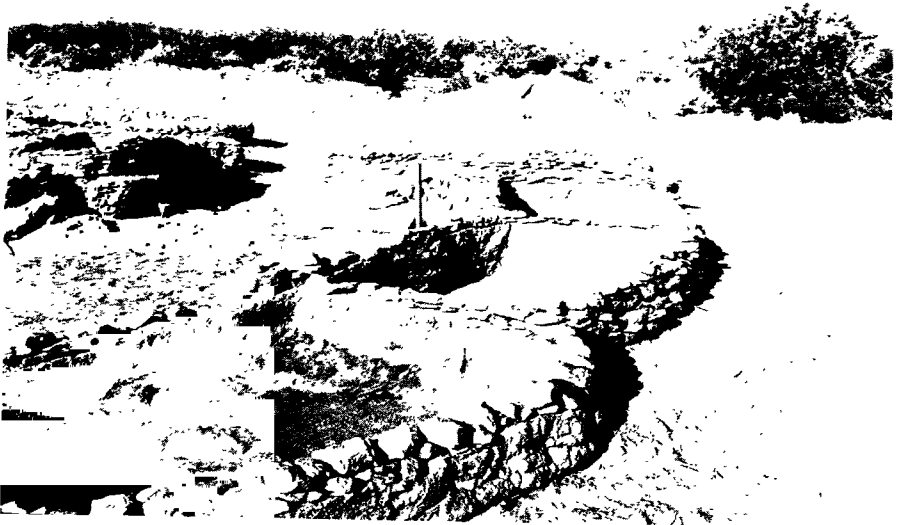


(A) House #47, Pueblo Grande de Nevada, looking east.



(B) Corner of a room showing alternate courses of adobe and stone used in construction, Pueblo Grande de Nevada.

PLATE XXXVI.



(A) A row of rooms, House 46, Pueblo Grande de Nevada, showing fireplace and step in first room.



(B) A detached room showing doorway, Pueblo Grande de Nevada.

stone sills about on the ground level, Plate XXXVI (B); and in one case a stone lintel was still in place.

These particular pit-dwellings with doors were all associated with a house possessing many rectangular rooms, and so may belong to a type later than the original style having only a hatchway in the roof. We surmise that there *was* an original style with such a hatchway, not alone from the known wide distribution of entrances through the roof in structures of this sort, but because we found in some instances thin flat slabs of stone worked around the edges, which would seem to have been serviceable only as hatch covers. And from the fact that such covers were found also in the ruins of rectangular rooms it seems probable that these too were often entered through the roof.

Interior doors between rooms were found but rarely during the course of our work; but it must be remembered that early Pueblo doors were more often like modern windows, the sills raised some distance above the ground, and it is possible therefore that our remnants of walls at Pueblo Grande do not as a rule extend high enough to show such interior doorways.

Even when the walls have been eroded down below the level of the sills, however, the former position of an outside door can frequently be located by the presence of a step at the side of a sunken room, Plate XXXVI (A).

These steps, by the way, possess an interest all their own on account of the resemblance of some of them to the so-called fire-screens found in kivas of presumably much later date. Generally speaking, a step is a structure about a foot high and a foot or less in length and thickness, set on the floor of a room between the fireplace and the wall nearest the courtyard. Always they are nearer to the wall than to the fire-place, sometimes actually touching the wall and continuous with it. Some of these steps are built of stone and adobe, others are simply squarish single stones or slabs set on edge in the floor. And it is the slab type of step that resembles most the kiva "fire-screen." From their position and from the evidences of wear seen on the tops of the steps there seems to be little doubt that they were actually used for this purpose—to facilitate stepping down into a sunken

room. Steps are usually found in the larger rooms, particularly those of wattle-and-daub type, but may occasionally be seen in rectangular rooms with solidly built walls.

In a few instances portions of a fallen roof have been preserved by charring, and these show stout round beams across which were laid slender sticks, quite close together, while upon these again was spread grass or rushes, with adobe over all.

Floors were usually of adobe plaster, or of flat stones roughly fitted together; but sometimes we found the stone floor plastered over with adobe, making a combination of the two, and occasionally the floor was merely the bare, hard-beaten earth.

The typical fireplace was a shallow bowl-shape depression, sometimes with a raised rim, set to one side of the center of the room, Plate XXXVI (A); but corner fireplaces with raised adobe or even stone rims were sometimes seen. Sometimes little bins made of adobe or a combination of slabs set on edge and plastered with adobe appeared in the rooms, usually, like one type of fireplace, in the corners. Fireplaces seldom occur in the smaller rooms, which were probably used as storage places and bedrooms only.

Besides the small shallow interior bins just mentioned, there are larger ones of adobe and stone built up against the outside walls of the houses, some of them holding several bushels; while even larger were granaries, constructed like miniature pit-dwellings apart from the main building. Some of these, however, had been almost entirely subterranean, with roofs at the then ground level; and one of them had a sunken entrance-way on one side, walled with upright slabs to keep the sand from caving in.

Turning to the construction of the walls, we found some of them built of loaf-like hand-shaped adobe bricks plastered inside and out with adobe, but most seem to have been made of long masses of adobe, laid on the wall in a more or less plastic condition and plastered over later. Occasional walls were built of alternate courses of adobe and flat stones of suitable size rather neatly laid, Plate XXXV (B); but in other cases stones were inserted at random among the adobe masses or bricks, the only care being to turn a flat face inward if the stone was large, so that it would be flush with the inner surface of the wall.

Many of the larger rooms showed an interesting type of wall construction—adobe and stone mixed, strengthened and supported internally by imbedded mesquite or screw-bean poles, or bundles of willow sticks, or both—if we may trust the imprints still remaining in the adobe. Most of these walls were crudely finished, and in one case at least, had sloped inward like the wall of a wikiup. In other instances such walls had evidently been vertical, but had not been strong enough to support so large a roof, for which purpose extra posts had to be placed at more or less regular intervals along the inside of the wall, posts now marked only by holes in the adobe floor. This pole-and-mud type of construction we characterized as “wattle-and-daub” although it differs somewhat from the type usually so called, and it is similar to, if not identical with, a type of structure found by Judd in western Utah.¹ There were also occasional floors with fireplaces, but without evident traces of substantial walls. These may represent arbors or partly open shelters; or the walls, originally of wattle-and-daub or of adobe without stone admixture, may have been entirely destroyed by decay and erosion.

Baseboards of stone slabs set on edge are sometimes seen at the base of the walls inside the room, especially when the room is semi-subterranean. The former height of the walls is problematical, for all that remains of them now is usually only a few inches in the upland houses, which were subjected to much erosion, and two or three feet in the valley ruins which were more or less protected by drifting sand. We can be reasonably sure that the buildings were only one story high, for the thickness of the walls—only five to eight inches—is not enough to support the weight of a second story, not to speak of a third or a fourth.

Most of the rectangular rooms with solidly built walls are very small, such sizes as four by six feet being not at all uncommon; a few are even smaller, and could have been used only as

¹ See Judd, Neil M., *Archaeological Reconnaissance in Western Utah*, Smithsonian Misc., Coll., LXVI, no. 17, Washington, 1917; *Notes on Certain Prehistoric Habitations in Western Utah*, Proc. 19th Int. Cong. Americanists, Washington, 1917; *Archaeological Investigations at Paragonah, Utah*, Smithsonian Misc., Coll., vol. LXX, no. 3, Washington, 1919; *Evidence of Circular Kivas in Western Utah Ruins*, Am. Anthropol. (N.S.), Vol. 19, no. 1, Jan.-March, 1917.

closets or granaries. In the part of the Pueblo explored by us, the kiva-like pit-dwellings were never more than ten or twelve feet in diameter. Largest of all types of rooms were those with wattle-and-daub walls, and oval or rectangular form, usually with floor slightly sunken below the ground level. One of these, the one with the in-sloping walls, measured approximately ten by fourteen and a half feet, and this was the largest room found.

Possibly the small size of most rooms may be explained by the lack of long poles for roof-beams, for at another site, on the Colorado river at the mouth of the Virgin, where long drift-wood logs are abundant, we found a kiva-like structure about thirty feet in diameter.

Many of the houses consist of one room only; others were of three or four rooms; but large houses composed of from eight or nine to twenty or thirty rooms are of frequent occurrence. In such cases the rooms are usually arranged in a semicircle or horse-shoe form about a court, Plate XXXVI (A), with the opening southward; but we have one example thus far of construction about a rectangular court, and one of an oval court, almost completely inclosed.

The largest house, Plate XXXV (A)—the one we were exploring when the work of the expedition came to a close, must have contained nearly a hundred rooms, for it was about two-thirds uncovered when the work ended and sixty-three rooms had already been found, arranged around two principal, approximately circular courts.

In the larger houses we usually find various evidences to prove long occupancy—deep deposits of refuse in the courtyards, built up, layer on layer, sometimes to a depth of seven feet; large peripheral ash-dumps; and, most interesting of all, abundant evidence of houses being built and rebuilt on the same ground, indicated by the floors and walls of older buildings underlying those of later structure, these often built with an entirely different ground-plan. In the largest house three different levels can be distinguished, and there may be more.

Our collection of artifacts illustrating the industries of the ancient people come from three sources—from the ruined rooms,



(A) A skeleton with pottery, Pueblo Grande de Nevada.

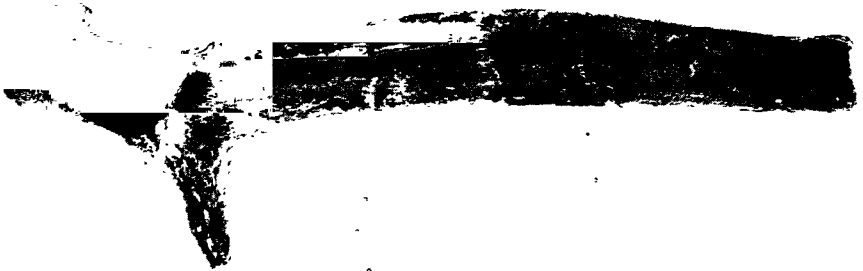


(B) Pitcher of red-ware with designs in black,
Pueblo Grande de Nevada.

PLATE XXXVIII.



(A) Painted Bowls, Pueblo Grande de Nevada.



(B) War-club of Elk-antler, Pueblo Grande de Nevada.

from the refuse deposits in courtyards and ash-dumps, and, most important of all, from the graves of the dead. I say most important, for in these graves appear objects in perfect condition of which fragments only can be found elsewhere.

It seems to have been a fixed custom to bury in ash-dumps and in ruined houses, and this, in this region at least, could not always have been because such places were easiest to dig in. It seems at least possible that the old people had a horror of leaving their departed friends away from the signs of human habitation: much the same spirit as is expressed in the old cowboy ballad, "Oh Bury Me Not On The Lone Prairee." Burials often appear below room-floors, but in no case thus far found has the floor been relaid over the grave, and in many instances the outlines of the grave can be traced through the fallen wall material filling the room—the first a good sign that the room had been abandoned, the last a sure sign that it was in ruins when the interment was made. In other cases there was plain evidence that the roof had been burned and the walls thrown down *after* the interment.

The skeletons always lie in a flexed position, Plate XXXVII (A), and no cremations have been encountered thus far. The mortuary offerings are varied-pottery of varying types, implements, and ornaments; while sometimes even dogs were buried with the dead. Naturally articles of perishable material have largely disappeared, but in some well-protected graves we have found crumbling fragments of coiled baskets, bits of blankets of fur-cloth and feather-cloth, and many pieces of fine woven fabric, undoubtedly cotton, including sections of narrow bands in two colors.

It will not be amiss, in view of the widely disseminated newspaper stories of a "race of giants," to state here that the stature of the inhabitants of Pueblo Grande de Nevada seems to have been slightly below the average of Pueblo Indians today. Some of the skulls show artificial occipital flattening, others not.

Most abundant of all the evidences of man's handiwork, outside of the ruins themselves, is the pottery, of which thousands of fragments may be found in and about the ancient habitations. Occasionally all the pieces of a vessel may be found in a room, but as a rule we must depend on the graves for whole or restorable vessels.

The pottery may be classified under several heads. Most abundant is the plain ware, taking the form of cooking-pots, water-ollas, canteens, long-necked bottles and bowls, with a few odd forms such as the duck-effigy bottle, of which two were found. Plain ware occurs in all the houses of whatever type; the quality varies from crude to fine, and the color from black to gray.

Taking the settlement as a whole, corrugated ware comes next in point of abundance, although it is scarce in the more southerly houses of the pueblo. One type of corrugated, in which the coils are left to form a decorative band on the neck of the otherwise smooth vessel, although not very abundant, occurs everywhere, and a rather crude notched type of corrugated is widespread.

In the more northerly houses thus far explored, however, beautifully made, carefully notched or waved corrugated ware is abundant, and there also occur some bowls neatly corrugated on the outside, and painted black-on-gray or black-on-white inside. The typical vessel here is a cooking-pot, the body decorated with notched corrugation and the neck with plain straight coils; but corrugated canteens, bottles, and bowls occur, also vessels embellished with alternate bands of straight and waved corrugation, Plate XXXIX (A).

Apparently beginning at an early period, and doubtless lasting to the end, for it is found everywhere in the pueblo, and at all levels, is the ware we call black-on-gray, which usually takes the form of bowls, or, very rarely, ollas, painted with geometric designs laid directly upon the clay composing the vessel, without the previous use of a white slip. The decorations are confined to the inside of the bowls, and vary from crudely executed designs in thin, irregular black strokes to beautiful and intricate patterns composed of broad, even lines, Plate XXXVIII (A).

An improvement on this type is the black-on-white, not so abundant, and found only in the form of bowls; in this the neat decoration in black is applied over a white slip. A kind of intermediate form between this and the last is a ware that is black-on-gray in color, but the gray seems to be a slip, applied like the white, and not the natural color of the pottery.

Scattered almost everywhere, especially about the houses of more advanced type, are occasional fragments of black-on-red ware, of which four forms have been found complete—the bowl decorated inside, the gourd-shape vessel, the pitcher, Plate XXXVII (B), and the jar, the last three, of course, decorated on the outside. The black sometimes has a glossy appearance little short of a glaze, and the red ground-color is often particularly rich and pleasing.

No description of the pottery found here would be complete without mention of the crude, coarse, crumbly, black or dark-brown pottery found on camp-sites along Muddy and Virgin rivers, sites which show no ruins or remains of habitations whatsoever. When decorated at all, this ware shows merely lines of curved imprints made with the finger-nail; while in form the vessels seem to have been more or less conical, with pointed bottoms.

This pottery is usually so much cruder and more irregular than the poorest Pueblo product that it can be distinguished at a glance. But the student who imagines it to be older than the Pueblo varieties on account of its more primitive and undeveloped character would be making a serious error in this case, for when found on Pueblo sites it appears only on the surface or not far below, and some of the camp-sites yielding it show also iron, glass, and china. In short, this crude ware was made by the Indians found in possession of the region by the Mormon pioneers—the Southern Paiute; and these Indians claim that it was still being made as late as the nineties.

Occasional sherds of Mohave ware may also be picked up along the Virgin, and on one camp-site fragments of a type of pottery, plain, with very thick rims, which seems to differ from all the rest.

It is not necessary here to enter into a detailed description of the flintwork found at Pueblo Grande de Nevada, for the arrow-heads, etc., though well made, are not distinctive in any way.

Attention should be called to the fact, however, that grooved axes, such as were used extensively by the Pueblos of later periods, are entirely absent here—in fact no axes of any kind have been found. A few long pebbles with an axe-like edge chipped at one end, and one notched hammer of the type used at the

ancient salt mines about six miles from the pueblo, are the nearest things to axes thus far discovered.

The metates are crude, and much like the type used until the present day by the Plateau tribes; manos occur in many forms and stages of elaboration; rude pestles are sometimes found, and mortar-holes in the bedrock are frequent about the upland houses. Griddle-stones appear occasionally, usually in a broken condition. The hatchcovers have been mentioned.

Under the general classification of stone objects may also be included pendants and crude animal figures of selenite, minute beads of steatite, and both pendants and beads of turquoise. There were, moreover, tubular smoking-pipes made of stone.

Animal bones of any sort are rare here, for some unknown reason, and implements of bone even rarer; but we have been able to procure several forms of awls made of this material, and some cylindrical objects likely used in chipping flint. The most interesting bone object found was a tubular pipe, which I think is unique; the stem is made of some compact bone, but the bowl is made of porous bone, coated with clay. Next in point of rarity is a large war-club of elk-antler, Plate XXXVIII (B), carefully worked and finished, which we regarded at first as an intrusive form; but since the close of the expedition Mr. Schellbach has found several similar clubs in another ruin farther up Muddy river.

Also of considerable interest are bone dice of two types, circular and oval. Both are coated on the reverse or concave side with pitch or asphaltum, and the oval dice often bear incised geometric patterns on the obverse side. Quite characteristic also are flat, more or less irregular, pieces of deer or mountain-sheep leg-bone, averaging two inches long, all perforated at about the center, as if for suspension. There are no turkey-bones, nor objects made from them.

Olivella shells from the Pacific served in the manufacture of beads of several types, while abalone and some massive, solid, white marine shell furnished material for pendants.

Little can be added to what has already been said with regard to textiles and the like, except that a small cave situated in the edge of the pueblo and yielding typical Pueblo pottery furnished

us also with some dyed cotton strings of red and blue and purple, and one piece of blue cotton cloth, somewhat like modern cheese-cloth in texture; and that some of the crumbling fine cloth found in graves was still purplish until paraffin was poured upon it.

The best preserved, if not the finest, textiles accompanied two remarkable burials which had been placed in soil naturally strongly impregnated with salt, on the crests of ridges where the drainage was good, and which possessed the added advantage of being sealed above with a rain-shedding crust of adobe. In one case large pieces of the cotton breech-clout could be preserved in fairly good condition, as well as sections of the girdle which supported it—a girdle made of numerous cotton strings loosely twisted together; while the second, a child, was enveloped in a fur-cloth robe the foundation cords of which were still in fair condition, although the fur had disappeared. This had been tied about the body with fiber cords and one of the flat woven cotton bands in two colors; while about the head was found a fringed fillet made of cords. Something about this salt impregnating the soil was especially favorable to the preservation of vegetal fibers, but not other things; for although the textiles, including basketry, were uncommonly well preserved in these two graves, the bones and the pottery were more disintegrated than usual.

Speaking of baskets it should be said that traces of them were seen in many graves; but only in rare instances was any part of a basket sufficiently substantial to preserve. All were coiled, that much could be easily seen; but whether or not there had been interwoven decorative patterns we were unable to determine. One example, however, had been ornamented with painted patterns laid on so heavily that design and color survived after being uncovered just long enough for a sketch to be made—and then basket, pattern, and all crumbled to dust.

The exploration of the ancient caves used as salt mines, Plate XL (B) which also contained Pueblo pottery and belong, in part at same period, yielded strings of yucca-fiber, Indian hemp and least, to the cotton, all of natural color, a bunch of cotton strings dyed deep red, and one string only dyed yellow. Strings from feather- and fur-cloth blankets were found here in good condition, but the

most complete articles of this character were a netting bag made of Indian hemp strings (Fig. 1,) and several sandals of yucca-fiber. These have pointed toes, and are distinctly Pueblo in type, although differing somewhat in detail from any footgear I have seen (Fig. 2).

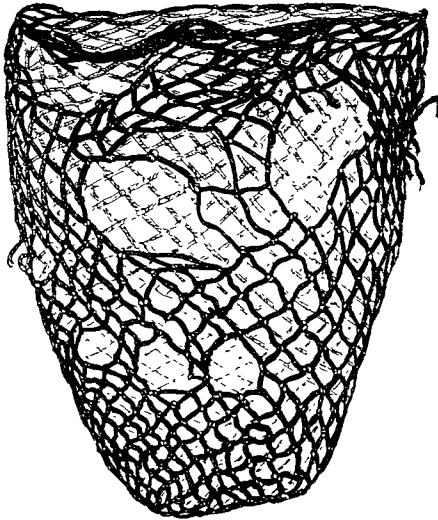


FIG. 1. Netting bag found in salt cave.

From the salt caves also came a few objects which may represent a culture older than that of Pueblo-Grande,—that of the Basket-makers. These were a fragment of a typical Basket-maker carved club, and two or three fragments of atlatl spears. Of course these may have been survivals from an earlier day in Pueblo Grande or one of the related villages, from which they somehow found their way into the caves. However it is certain that the typical weapon of Pueblo Grande was the bow and arrow rather than the atlatl, for true arrowheads are abundant; and in one grave were actual fragments of cane arrows, which we succeeded in preserving with melted paraffin. Moreover, negative evidence is furnished by the fact that points suitable for atlatl spears were *not* found in the ruins, the only spear-point appearing within the limits of the pueblo being picked up on the surface some distance from any house.



(A) A corrugated pot *in situ* Pueblo Grande de Nevada.

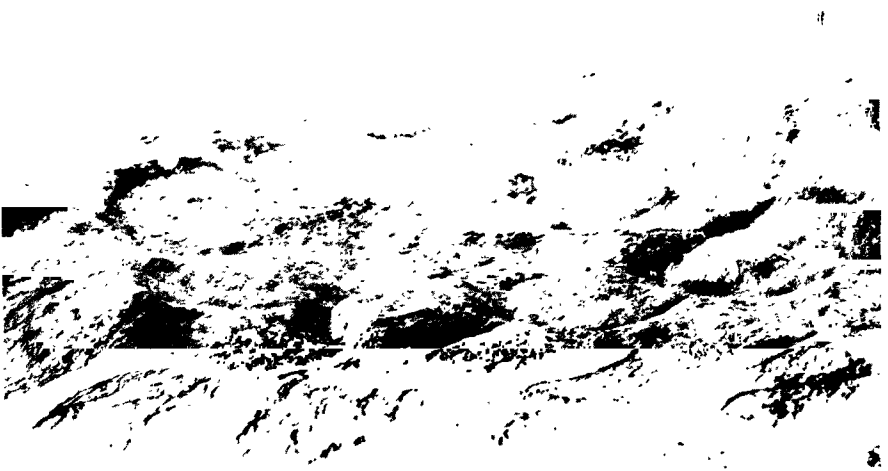


(B) A salt peak, site of ancient salt-mines near Pueblo Grande de Nevada.

PLATE XL



(A) Stone hammers with original wooden handles. Ancient salt-mine near Pueblo Grande de Nevada.



(B) Salt ledge forming floor of an ancient mine showing markings made in quarrying salt. Near Pueblo Grande de Nevada.

The finding of a notched hammer-head in the pueblo has already been mentioned. In the salt caves we found hundreds of such hammer-heads, used in mining the salt, Plate XL (B), together with roughly chipped picks and choppers. And we were fortunate enough to secure a number of the stone salt-ham-

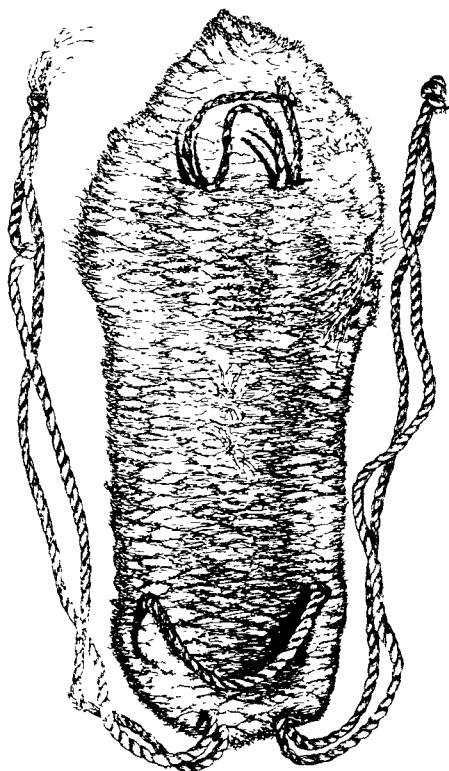


FIG. 2 Sandal of yucca fiber found in salt cave.

mers still provided with their original wooden handles, each hammer showing two or three thin, limber sticks bent around through the notches to form the handle and wrapped together with yucca-fiber string, Plate XL (A).

Turning to the foods of the ancient people as evidenced by our collections, we must conclude first of all that they placed little dependence on animal foods, if we may trust the scarcity of animal bones in the refuse-heaps. Still, the bones of most of

the native animals appeared, such as the deer, the mountain-sheep, the rabbits, the desert turtle. On the other hand, large quantities of charred corn and corn-cobs tell of their dependence on agriculture, while beans and squash seeds give some idea of its variety. Charred mesquite-beans, screw-beans, and unidentified seeds show that the natural products of the desert were not neglected.

As for our conclusions, there has been no time for extended comparisons, so any conclusions formed must be regarded as tentative.

Taking it all and all, the culture seems more like that found by Judd at Paragonah, Utah, than anything else of which I have read published accounts. There are, however, important differences. For example, Judd found mostly rectangular rooms, grouped about rectangular courts, in which were a very few circular, semi-subterranean rooms, apparently kivas; while at Pueblo Grande the courts are semicircular as a rule, and although we find many rectangular rooms, and circular chambers which may have been kivas, there are also numerous circular, semi-subterranean structures—sometimes whole groups of them—which were undoubtedly living-rooms—true pit-dwellings and *not* kivas. In addition Judd found hogan-like dwellings northeast of Great Salt Lake, containing Puebloan pottery; and again at Beaver City, Utah, where they overlaid typical rectangular adobe rooms, while we have found no such habitations whatever. Various other differences might be cited.

On the whole, Judd's Paragonah ruins seem to show a higher state of development than ours and quite possibly represent the same culture at a somewhat later time.

We are not ready yet to state with certainty the exact position of Pueblo Grande in the scheme of Southwestern chronology; and the case at present looks somewhat more complicated than it did at first. Our first hypothesis, that Pueblo Grande exemplifies the transition period between the Pre-Pueblo and Early Pueblo Periods as defined by Kidder, was shaken by Kidder himself after he had examined our finds. Judging by these, he thinks, we have instead a progression from the Post-Basket-maker stage

directly into the Early Pueblo, omitting entirely the intervening Pre-Pueblo stage which occurs farther east.

This opens an interesting field for speculation. Did the Post-Basket-Maker culture survive longer in this western peripheral region, after it had given way, farther east, to the influences which produced the Pre-Pueblo and then the Early Pueblo cultures? If so, when the Early Pueblo began to blossom forth, perhaps it then spread westward across the Colorado River to the still surviving Post-Basket-Maker villages on the Virgin and the Muddy, where it stimulated their people to new achievements. And this would account for conditions as we find them at Pueblo Grande de Nevada.

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MAYA INSCRIPTIONS: STELA C AT COPAN

By JOHN E. TEEPLE

STELA C at Copan shows the Venus sign in Glyph 3, has the date 18 Kayab, and so has been supposed to have some relation to the calendar or movement of the planet Venus. Beyond this, however, the relationship of the calendar round dates given has been largely guesswork, and the guessing has usually been wrong. Now that we know the system of the Venus calendar,¹ I think we can at least indicate just what relation the various dates bear to one another and to the calendar. As explained previously, the perpetual Venus calendar consisted of a series of Zero dates, each calendar beginning with a 1 Ahau Zero date and extending over 57 or 61 Venus years, nearly two calendar rounds. The Zero date most often referred to in the inscriptions, because it was the one in use throughout the whole great period, was 1 Ahau 18 Kayab, that calendar extending from 9.14.15.6.0 to 9.19.7.14.0. Normally, at the end of any sixty-first Venus year, which should end at 5 Kan, Venus itself has dropped behind about 4 days, so 4 days are deducted from 5 Kan, giving a new 1 Ahau Zero date and starting a new calendar. It is probable that every fifth calendar was only 57 Venus years in length, and every sixth Zero date was dropped entirely. Since 1 Ahau can occupy 73 positions in the Mayan year, there would be 73 possible Zero dates before repetition occurs. 4 Ahau always ends the tenth Venus year of the calendar, 5 Ahau the thirty-fifth, and 6 Ahau the sixtieth. Some of the Zero dates in the series would be as follows:

1—7.16.17 13.0	1 Ahau	18 Kayab	} In the thirteen cycles before 4 Ahau 8 Cumhu
26—12.19.9 10 0	1 Ahau	18 Ceh	
27—Omitted			
28—13.4.2.0 0	1 Ahau	3 Pax	
33—Omitted			

¹ John E. Teeple, *Maya Inscriptions, The Venus Calendar and Another Correlation*, AMERICAN ANTHROPOLOGIST, Vol. 28, No. 2, April-June 1926.

34—1.8.10.4.0	1 Ahau	13 Yaxkin
35—1.13.9.3.0	1 Ahau	8 Cumhu
36—1.18.8.2.0	1 Ahau	18 Yax
67—8.5.8.3.0	1 Ahau	13 Muan
72—9.4.17.8.0	1 Ahau	13 Kankin
73—9.9.16.7.0	1 Ahau	3 Yaxkin
1—9.14.15.6.0	1 Ahau	18 Kayab
2—Omitted	(1 Ahau	8 Yax)
3—9.19.7.14.0	1 Ahau	18 Uo
4—10.4.6.13.0	1 Ahau	13 Mac
5—10.9.5.12.0	1 Ahau	3 Xul

The above will cover about all the Zero dates used in the inscriptions and the Codices. With the above Tables before us we can now date in the long count the various calendar round dates given in the inscriptions of Stela C, choosing for each one the period when that date ended a Venus year, with the following results:

	1—8.1.15.1.0	6 Ahau	18 Kayab	{ In the thirteen cycles before 4 Ahau 8 Cumhu
	2—8.10.5.9.0	6 Ahau	13 Muan	
	3—1.14.5.7.0	4 Ahau	8 Cumhu	
or	3a—1.16.5.17.0	5 Ahau	8 Cumhu	
	4—10.0.4.0.0	4 Ahau	18 Uo	
	5—10.2.4.10.0	5 Ahau	18 Uo	

The date of the monument itself is given as 4 Ahau 18 Muan, and this has been decided on artistic and other grounds to be 9.17.12.0.0 4 Ahau 18 Muan. Now, at that date Venus was probably the most conspicuous object in the evening sky, less than 36 days from conjunction and 40 days from the end of the Venus year at 9.17.12.2.0.5 Ahau 18 Kayab. The author of the inscription accordingly took the opportunity to give a lecture on the Venus calendar, particularly in its relation to 4 Ahau, 5 Ahau, 6 Ahau, and the months Muan and Kayab, after the custom of the Maya writers.

The reason for the interest in 4 Ahau and Muan, and in 5 Ahau and Kayab, is obvious; but why the interest in 6 Ahau? This becomes clear when we recall that the current 18 Kayab Venus calendar is a short one of only 57 years, and consequently there will be no sixtieth Venus year ending in 6 Ahau 18 Kayab in the current calendar. With this in mind the scribe computes

the last time that a 6 Ahau 18 Kayab ended a Venus year, nearly six thousand years before, and also the last time any Ahau ended a Venus year in a Muan calendar. This computation covers the first side of the inscription.

A free translation of the understandable part of this inscription on Stela C would be about as follows:

"Thirteen calendar rounds after the last 6 Ahau 18 Kayab which ended a Venus year (8.1.15.1.0 previous Great Cycle) and 11.14.5.1.0 after that resulting 6 Ahau 18 Kayab (9.16.0.8.0 previous Great Cycle) was 6 Ahau 13 Muan (8.10.5.9.0 which ended a Venus year) which was a day of a new moon and which ended a moon group, etc."

The other side of Stela C apparently reads about as follows:

"Thirteen calendar rounds (from the well known 4 Ahau 8 Cumhu at 13.0.0.0.0 was 4 Ahau Cumhu (1.14.5.7.0 ending a Venus year). The next time after the present, when 4 Ahau will end a Venus year will be at 4 Ahau 18 Uo (10.0.4.0.0) which ends a Tun. This is so because the Yax Zero date which you would expect (1 Ahau 8 Yax) will be omitted. The next 5 Ahau ending a Venus year (after this 5 Ahau 18 Kayab one that is just before us) will be at 5 Ahau 18 Uo (10.2.4.10.0). This monument was erected on 4 Ahau 18 Muan (9.17.12.0.0)."

Left Side:

In the 13 cycles before 4 Ahau 8 Cumhu	$\left\{ \begin{array}{l} 8.1.15.1.0 \\ 1.14.5.7.0 \\ \hline 9.16.0.8.0 \end{array} \right.$	6 Ahau 18 Kayab ended a Venus year.
		13 calendar rounds added.
		6 Ahau 18 Kayab signifi- cance unknown.
	$\begin{array}{r} 11.14.5.1.0 \\ \hline 8.10.5.9.0 \end{array}$	6 Ahau 13 Muan ended a Venus year, was a new moon, and ended a moon group.

Right Side:

	13.0.0.0.0	4 Ahau 8 Cumhu
	1.14.5.7.0	13 calendar rounds added
	<hr/>	
	1.14.5.7.0	4 Ahau 8 Cumhu ended a Venus year.
or,	13.2.0.10.0	5 Ahau 8 Cumhu
	1.14.5.7.0	13 calendar rounds added
	<hr/>	
	1.16.5.17.0	5 Ahau 8 Cumhu ended a Venus year.

10.0.4.0.0	4 Ahau 18 Uo ends a tun and is the next 4 Ahau to end a Venus year.
9.19.14.5.0	1 Ahau 8 Yax omitted as a Zero date.
10.2.4.10.0	5 Ahau 18 Uo is the next 5 Ahau to end a Venus year.
9.17.12.0.0	4 Ahau 18 Muan, Date of the monument.

Of course a good many of the hieroglyphs are still entirely unknown, but I think the above gives a general trend of the inscription. Since any given date like 1 Ahau 18 Kayab as the end of a Venus year can only recur at intervals of 14.17.17.11.0, which is about 6000 years, there is not much difficulty in placing such a date in the long count. The starting glyph on each side of the Stela which has been variously interpreted as 13 cycles, 13 great, great cycles, etc., is here taken to mean 13 calendar rounds.

We cannot furnish proof that these readings are correct but the following points should be noticed:

First: These readings and explanations are quite independent of any correlation between Maya and Christian chronology, and are based only on Maya data.

Second: Aside from the date of the monument there are seven dates given. Six of these seven fall into their places in the Venus calendars just as we should expect in such a discussion as the priest is giving. The single exception is the second 6 Ahau 18 Kayab whose significance is unknown. Possibly he desired to show that 4 Ahau 8 Cumhu ended a Venus year just 13 calendar rounds after the great 4 Ahau 8 Cumhu (or that 5 Ahau 8 Cumhu did just 13 calendar rounds after the corresponding 5 Ahau 8 Cumhu), and then he made the same addition to 6 Ahau 18 Kayab for the sake of symmetry.

Third: As so arranged, 6 Ahau 13 Muan ending a Venus year would fall on a new moon day according to Maya reckonings as the inscription says it does; and 4 Ahau 18 Uo ending a Venus year would also end a tun as the inscription notes.

Fourth: Altar W' Copan gives date 9.17.5.9.4 just 40 days before the end of a Venus year, the same as Stela C does, and Stela 1 Los Higos gives a date 9.17.10.7.0 just 36 days before the end of a Venus year. Both of these are accompanied by Venus

signs and apparently are an attempt to record Venus at its greatest brilliancy.

Fifth: The reading of the glyph as 13 calendar rounds was what first led the writer to see that Stela C was a summary of the Venus calendars. There is probably not sufficient evidence to warrant one in insisting on this reading. Possibly the first appearance of the glyph refers to the previous 13 cycles, and the second one to the present 13 cycles, but whatever meaning is given to this glyph does not seriously affect the interpretation of the inscription as a whole.

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MAYA INSCRIPTIONS, IV

By JOHN E. TEEPLE

IN RECENT articles I attempted to work out a method of correlating Maya and Christian chronology entirely from pre-Columbian sources. This work resulted in three or four possible dates, but the best one, both in its astronomical agreements and in its relation to the Maya dates of Spanish times, made November 22, 504 of our Julian Calendar equal to Maya date 9.16.4 10.8, 12 Lamat 1 Muan. The method used is probably correct, but I do not see how we can consider the result itself as necessarily final. At the same time, this correlation will conform to the astronomical data available in the Maya inscriptions and codices while no other correlation that I have been able to find proposed by any other investigator will stand this test.

It is the purpose of this article to show briefly the nine steps of the argument by which the above correlation was reached, point out the strength or weakness of each step and attempt to bolster up some of the weak points.

1. The first step of the work consisted in determining the values of glyphs D and E of the supplementary series. At the time of publication a few of the series gave trouble, but further work has indicated that aside from the few late stelae at Quirigua only two monuments out of more than a hundred in all the Maya territory fail to conform to the solution offered; these two are Stela 3 at Tikal and Stela 1 at Piedras Negras. In the case of Stela 1 at Piedras Negras we have Stela 3 at the same city, with the same date and with a supplementary series that does conform to the others. The proof seems to be perfectly adequate and we can with confidence give the date of new moon in Maya figures with an error of not more than one day at any time between, say, 9.12.0.0.0 and 9.18.0.0.0.

2. Pages 51-58 of the Dresden Codex were long ago recognized as an eclipse table, but it was not specifically pointed out whether we were dealing with a table of solar or lunar eclipses. It must be

one or the other and could not be both. An examination of the eclipse dates showed several of them as much as 17 days distant from the conjunction of the sun with the moon's node. 13 days is about the limit for lunar eclipses, while as much as 18 would be possible for solar eclipses, so we may conclude safely that we have here a table of solar eclipses, and consequently the eclipse days are new moon days.

3. Given any series of 69 consecutive eclipse syzygies, it is possible to compute to a day the dates when the sun is in conjunction with the moon's node. Applying this method to the table we find that at the zero date 11 Manik an eclipse occurred at day 167 of the Tzolkin and the sun was in conjunction with the moon's node on day 166 of the Tzolkin. If we use the middle row of days in the table, then the eclipse and zero day was 12 Lamat day 168 of the Tzolkin and the conjunction with the moon's node was on day 167. We are safe, then in saying that, at the date when the table began, there was an eclipse just after the node conjunction, but not more than two days after it.

4. Next comes the question of a date for the beginning of the eclipse table. It must have a definite date and cannot be used over and over because, while the new moon dates would agree well enough for a while, some of the eclipses would not. The day of conjunction of the sun with the moon's node keeps receding in the Tzolkin and if one attempted to use the table for a second period several of the eclipses, such as numbers 12 and 35, for example, would drop out and be replaced by others one moon earlier. The date usually assigned to begin the table is 9.16.4.10.8 and, so far as new moon is concerned, we know this is a new moon day from the Maya monuments. The beginning date must be either 11 Manik or 12 Lamat and, aside from 9.16.4.10.8, there is only one other 11 Manik or 12 Lamat date on pages 51-58; this is on page 51-a in the first column but neither number in that column will reach 12 Lamat without a correction.

The fact that the cities Copan and Naranjo seem to have arranged the moon groups of the supplementary series in their later monuments in accordance with this eclipse table lends some support to the belief that 9.16.4.10.8 was an eclipse date and was the

zero date of this table. This question of date is, however, a weak link in the argument. While 9.16.4.10.8 is the only date given on the pages that could be the zero date of the calendar, I know of no way to prove that it was the actual zero date. Final proof on this point, it seems to me, must be deferred until someone identifies and deciphers an eclipse date somewhere in the inscriptions.

5. Pages 46–50 of the Dresden Codex and the computations on page 24 were identified as relating to Venus and the Venus calendar was fully deciphered by Förstemann 25 years ago. From the 3 calendars given on pages 46–50 of the Dresden Codex with zero dates of 1 Ahau 18 Kayab, 1 Ahau 13 Mac, and 1 Ahau 3 Xul, respectively, I was able to work out the complete succession of the 73 zero dates possible before a repetition occurs. Further examination showed that the 1 Ahau 18 Kayab calendar contained only 57 Venus years, that the next possible zero date, 1 Ahau 8 Yax was omitted entirely and that the usual Venus calendar contained 61 Venus years. Apparently the complete system called for 4 calendars in succession having 61 Venus years each, a fifth calendar of 57 Venus years and the sixth zero date dropped, a total series of 301 Venus years in 1.4.8.4.0, just 24 days less than the total would be if we computed each Venus year at 584 days. This is quite accurate. These series of 301 Venus years were supposed to revolve in endless succession and twelve of the series plus one calendar or one dropped zero date covered the whole cycle of 73 possible zero dates before a repetition occurred. This magnificent conception of a perpetual Venus calendar is clearly indicated in Stela C at Copan, but proof of the whole concept is not needed for our argument. We only need the mechanism in actual current use. I think there is abundant evidence in the cited pages of the Dresden Codex to show the sequence of zero dates of the calendars, the length of each calendar as 61 or 57 Venus years and the custom of omitting an occasional zero date (which of course was necessary after every 57 Venus year calendar, or vice versa, when a zero date was to be omitted, a 57 year calendar was necessary).

6. Given the system of Venus calendars and the sequence of zero dates we must still identify somewhere in the inscriptions

a statement of the end of a Venus year and so place some one zero date in the long count. Altar K at Copan seems to state clearly that a Venus year ended according to the calendar on 9.12.16.7.8, 3 Lamat 16 Yax. This would be the end of the 37th Venus year of the Venus calendar whose zero date was 9.9.16.7.0, 1 Ahau 3 Yaxkin, and the zero date of the calendar immediately following it would be 9.14.15.6.0, 1 Ahau 18 Kayab. Corroborative evidence was thought to be found in the Lintel of Temple C at Tikal, and other corroboration will be given below.

The weakness of this step is that it depends on the correctness of my readings of the inscriptions cited, and, if some experienced Maya scholar should dispute my interpretation of the hieroglyphs very little proof could be offered in rebuttal.

7. From the above combined data we can specify that on day 9.16.4.10.8 there was an eclipse of the sun. This eclipse was between 0 and 2 days after the sun was in conjunction with the moon's node. The node conjunction was probably between 19 and 24 days after an inferior conjunction of Venus. In a rigid examination of all dates this latter interval should probably be increased, say, to 15-28 to care for all possible fluctuations in the length of Venus years and this has been done in the present work. What dates satisfy the above conditions?

8. In any consecutive list of 65 recent Venus years, covering a period of over a century, not more than three will have inferior conjunction 19-24 days before node conjunction and not more than 5 within the 15-28 day limit. The same 3 or 5 will repeat during the next cycle within essentially the same limits, the variation being not over a day or two in a thousand years.

This relation of Venus conjunctions to conjunction of the sun with the moon's node restricts us to not over 3 or 5 days per century that are possible within our limits. The second relation however, that between node conjunction and eclipse, restricts us still further. If, for example, in a cycle of 65 Venus years, year number 4 meets our 15-28 day condition, and also is followed by an eclipse within 2 days after node conjunction, then in succeeding cycles the eclipse after number 4 will not fall within this two day limit again for over 1100 years. Hence we are safe in saying that

between the time of Christ and the year 1000 A. D. not more than five dates can possibly conform to the conditions we have deduced from the Maya records for day 9.16.4.10.8.

9. If we now conceive the Venus years between the time of Christ and the year 1000 A. D. as arranged in successive cycles of 65, beginning the first cycle anywhere B. C., and if we examine the years of a cycle for the 15-28 day relation, we may find for example that only years 4, 23, 42, 50 and 61 fall in or near our limits. We now examine year 23 by successive additions of a 65 cycle to it till we arrive at a date when the eclipse following year 23 falls in or near our 2 day limit and then pursue the same course with years 4, 42, 50 and 61. The method is probably cumbersome and the explanation somewhat labored, but when one is not an astronomer he must use whatever method and tools are available to him.

By this means six dates were found which seemed to meet the conditions fixed for 9.16.4.10.8 closely enough to warrant having accurate computations made regarding them. These were November 22, 504; June 6, 327; January 26, 548; May 16, 877; January 5, 1098; and December 14, 46 B. C. All dates are in the Julian Calendar, and all but the last are A. D. All six dates satisfy reasonably well the conditions we have imposed for 9.16.4.10.8, as to Venus conjunction, node conjunction and eclipse, and further it seems likely that no other date between say 50 B. C. and 1100 A. D. will meet the conditions.

If we could be sure that our conditions are fair and are justified, then one of these dates must represent 9.16.4.10.8. So far as our astronomical limits are concerned they are probably generous. If we were to use Willson's date 9.9.9.16.0, 1 Ahau 18 Kayab as the end of a Venus year instead of the one we have used, it would lead us still to at least four of the same six dates. So far as concerns the nine steps that lead to our set of conditions for Maya date 9.16.4.10.8, it seems probable that careful study will show at least seven of them as fully justified. The other two, numbers 4 and 6, may possibly be open to question. It seems probable in number 4 that 9.16.4.10.8 is the zero date of the eclipse calendar, but possibly it is not. Likewise 9.12.16.7.8 on

Altar K at Copan, in step number 6, probably shows the end of a Venus calendar year, but possibly it does not. If these two steps are correct we are probably committed to one of the six dates found for 9.16.4.10.8. If either of the two steps is in error, and some other reading should be found for Venus morning star or for the beginning of the eclipse calendar, then our six dates would probably be wrong, but the method would remain to be applied easily to the new readings.

Of these six dates for 9.16.4.10.8, which astronomically are almost equally good, I have selected November 22, 504 as probably most satisfactory for two reasons. First, because it most nearly coincides with the general period of time arrived at by Morley, Spinden, and others. Second, because the Maya chronicles of early Spanish times seem to agree in demanding a Katun 13 Ahau ending about 1540. Most of these chronicles agree that the Katun ended in 1536, some that it ended in 1539, and some 1542. Now the November 22, 504 date gives a Katun 13 Ahau ending in 12.9.0.0.0, 13 Ahau, 8 Kankin on February 22, 1545, while all the other five dates lead to Katun 13 Ahau ending variously from 33 to 85 years distant. This correlation then of November 22, 504, with 9.16.4.10.8, 12 Lamat 1 Muan entirely satisfies all pre-Spanish records of the Maya so far as our present knowledge reaches, and in a general way satisfies the post-Spanish records. But in details such as year bearers, exact year that a Katun 13 Ahau ended, and position of O Pop in the Julian year it disagrees with all post-Spanish sources.

Is there some way to reconcile these discrepancies of post-Spanish times? I will venture a suggestion here, leaving the consideration of its plausibility to those more competent than I am. The last inscription giving astronomical data in full agreement with old Empire inscriptions is the one at Chichen Itza 10.2.9.1.9. This was probably 900 years before Spanish times. Is it probable that during these 900 years, after the long count was abandoned, some small change or error crept into the calendar? We know that at Quirigua after 9.18.0.0.0 a definite change or error occurred which persisted through all the remaining monuments at that place. If we could assume that somewhere during these 900 years

a change of exactly 9 tuns occurred, whether by accident or design, then our correlation would agree with both pre-Spanish and post-Spanish data. April 10, 1536 was 12.8.11.0.0 according to our correlation. If we assume the 9 tun error or change as at all plausible the Maya were counting that day as 12.9.0.0.0, and we should have a Katun 13 Ahau ending in 1536, the year bearer would be correct and O Pop would fall just after the middle of July, as Landa indicates, and our correlation would even miss by only a couple of days agreement with Dr. Spinden's day to day correlation, at least during Spanish times, but of course not during the times of the Maya Empire.

The weakness of this suggestion is, of course, that it demands an error or change to fit the need. It can be regarded as no more than a suggestion. However, the evidence we have, such as it is, seems to point toward the correlation November 22, 504 equals 9.16.4.10.8 Maya as the most plausible one for the times of the Maya Empire. Applications of this correlation to different Maya inscriptions have produced to date most interesting results.

POSTSCRIPT

Since the above was written in 1926, Senor Juan Martinez Hernandez¹ and J. Eric Thompson² have sent me copies of their recent articles. Both these authors revive the Goodman correlation of 11.16.0.0.0 13 Ahau 8 Xul equals October 31 or November 3, 1539, and both bring added evidence. If we accept the tuns given in the chronicle of Oxkutzcab and postulate an unbroken calendar for over one thousand years, then no other correlation is possible; but maybe we should not accept the tuns as accurate so long after the long count had fallen into disuse, and again under the circumstances of Aztec domination it may be just as plausible to postulate an adjusted calendar as an unbroken one. If we reject the tun evidence in this one chronicle, then other dates that are distant a multiple of 5.5.8.0 agree just about as well with the

¹ Paralelismo entre los Calendarios Maya Y Azteca; for Juan Martinez Hernandez, in "Diario de Yucatan," February 7, 1926.

² A correlation of the Mayan and European Calendars, by J. Eric Thompson; Publication No. 241, Field Museum of Natural History, January, 1927.

astronomical and other evidence and some agree better. If we do not postulate an unbroken calendar, then the Spanish evidence is of very little assistance because we do not know the quantity or character of the adjustment made. This is the reason for my belief that the correlation must come from pre-Spanish sources.

In the chronicle cited by Senor Martinez it appears that even the learned Indians were not aware that a certain day was 11 Chuen 18 Zac till they computed the date more or less accurately from old records. After this computation they correlate 11 Chuen 18 Zac with February 15, 1544. Senor Martinez says it should have been February 18, 1544, and computed from Bishop Landa's calendar it should be February 21, 1544. This latter date would be required to give the proper moon day if the 11.16.0.0.0 correlation is correct. In any case we have here only a calendar round date which recurs every 52 years in a slightly different position in our months.

Again the 11.16.0.0.0 correlation fails somewhat to agree with the apparent astronomical evidence in two points: one is the Venus conjunction and the other the conjunction of the sun with the moon's node. The former affects step 6 of the above discussion, where I have placed the 1 Ahau 18 Kayab zero date of the Venus calendar at 9.14.15.6.0; Willson placed this date two calendar rounds earlier at 9.9.9.16.0 because that date appeared on page 24 of the Dresden Codex. The 11.16.0.0.0 correlation demands that 1 Ahau 18 Kayab as a zero date should be placed 4 or 6 calendar rounds later than I have done and the latter would be at 10.10.11.12.0. It is possible that the number 1.5.14.4.0 on page 24 of Dresden Codex is meant to be added to 9.9.9.16.0 to give the 1 Ahau 18 Uo zero date in the long count and this would agree with 10.10.11.12.0 1 Ahau 18 Kayab as zero date and would satisfy the 11.16.0.0.0 correlation.

As to the second point of node conjunction, this correlation demands either that the table on pages 51-58 Dresden Codex is not a table of eclipse syzygies as our steps 2 and 3 above require, or that its date is not 9.16.4.10.8 as our step 6 requires. It seems to me rather certain that it is a table of eclipse syzygies. Anyone who takes the trouble to plot on a tzolkin wheel consecutive

eclipses visible in Maya territory over a period of only 50 or 60 years will see at once how naturally the Maya would be led to construct such a table, and how easy it would be for them to recognize the node conjunction days occurring every 173.31 days, without necessarily having any idea of the obliquity of the moon's orbit, of the meaning of a node, or of its bearing on the mechanism of eclipses. It seems to me that our steps 2 and 3 are fairly well grounded. In step 4, however, we have dated the table 9.16.4.10.8, as previous workers have done, but the 11.16.0.0.0 correlation demands a date for the table approximately between 10.14.0.0.0 and 10.15.0.0.0. No such date appears on pages 51 or 52. 10.19.6.0.8 as given on page 51 might be meant for such a date but is in error as it stands, and the correction is not obvious.

Of all the correlations that have been deduced from late Maya and early Spanish records the 11.16.0.0.0 one is by far the most promising in its relation to astronomical data of the inscriptions and codices, but it has the defects noted above. Of the 6 correlations given above, based on early Maya inscriptions and codices, the one dating 9.16.4.10.8 as November 22, 504 gives excellent agreement with the calendar of Spanish times if we admit a 9 tun calendar adjustment, and the one January 26, 548 agrees with an error or adjustment of only one moon (i.e., 29 days). If we could fix the dates of steps 4 and 6 beyond dispute, or if we could agree on the reliability of the tun statements in the Oxlutzcab chronicle, and on the probability or improbability of an unbroken calendar, then the correlation could be settled beyond argument. As the matter stands, however, there are insufficient data to regard any correlation as definitely proven, and it is important to continue the search for further data.

50 EAST 41 STREET,
NEW YORK CITY.

REPORT ON WORK OF FIELD MUSEUM EXPEDITION IN MADAGASCAR

FROM JANUARY TO SEPTEMBER 9, 1926

BY RALPH LINTON

I FEEL that a report on the activities of the expedition to date will be much more comprehensible if it is prefaced by a brief account of the conditions governing work in Madagascar. This is the more important as most of the English and American books dealing with the island contain a good deal of erroneous information. Mr. Osborn's book *The Land of the Man Eating Tree*, is the worst offender, but even the books of missionaries who have spent many years in the island usually contain mis-statements. Their travels have usually been limited to a few provinces, and they have assumed that the conditions they found there were universal.

GEOGRAPHY

At least nine-tenths of the surface of Madagascar is mountainous or at least hilly. The only extensive pieces of level land are in the extreme south and along the southeast and southwest coasts. In the north the hills come down to the sea on both sides. The so-called plateaus in the interior are really masses of hills which would be classed as very fair-sized mountains anywhere east of the Rockies. There is a nearly continuous belt of forest along the entire eastern side of the island with numerous isolated forests on the western side. The center of the island is treeless, or nearly so. The extreme south is semi-desert, with thorny scrub and cactus. There are numerous rivers, but only the Betsiboka, on the west coast, is navigable for any distance.

CLIMATE

There are two seasons, the dry and rainy, the latter being much longer in the north than in the south. In the central part of the island, about Tananarive, the rains usually last from late October or November until late March or April. The heaviest

rainfall occurs in the north and east. Along the east coast as far south as Mananjary there are almost daily rains even in the dry season. During the real rainy season work in this region is almost impossible. The rains are lighter on the west coast, but impede work there considerably. I am informed that it is quite possible to work in the far south during the rainy season and that the best time to visit this region is at the end of the rains, when the water holes are full. During the latter part of the dry season there full desert conditions are reached, with water holes two and three days' march apart.

In general the climate is debilitating for Europeans even in the high interior plateau. I find that I tire easily and that the sun seems more violent than in any region that I have previously visited.

TRANSPORTATION

Transportation is the most difficult problem here. There are railroad lines from Tamatave on the west coast to Tananarive, with branch lines leading northward to Andreba, at the southern end of Lake Alaotra, and southward to Antsirabe. From Antsirabe there is an auto road south to Ambalavao, with a branch east to the port of Mananjary. There is also an auto road from Tananarive to Maevatanana, the head of navigation on the Betsiboka river. Outside of these main lines there are practically no roads over which one could use a wheeled vehicle, even a bullock cart. Horses, which might solve the problem, are unable to stand the climate. Even those imported from Africa soon die. All Europeans and rich natives travel in a *filinzana*, a chair slung between two poles, which is carried by shifts of bearers. Eight to 12 men are required, as the natives are accustomed to fast marches and light loads. Forty pounds per man is the legal load limit, and forty to forty-five kilometers a fair day's march. There are practically no volunteer bearers to be had at the present time. Men are obtained from the government, which exacts bearer service as a form of tax. The rate varies slightly from province to province, but is normally 4 fcs. per day without rice, with 2 fcs. per day for the return journey, making an actual price of 6 fcs. a day for time of travel. Bearers are usually changed at

district headquarters, the old men going back to their own district. As they are forced labor, there is a good deal of grumbling and malingering, but desertions are rare and thefts from loads almost unknown.

There is almost no coastwise traffic. The only boats are two small steamers of the Messageries Maritimes line which operate under a government subsidy, one taking the east and the other the west coast. They are supposed to make 12 trips a year, but actually make about 6. I have met a missionary here in Majunga who has been waiting two and a half months for one of them. There is only this regular steamer on the east coast. On the west there are small native sailing craft of three or four tons burden and Arab Dhows, but the coast is dangerous and wrecks frequent so that they are only to be used as a last resort.

The filanzana with bearers is the only certain method of travel here, but even if one were to take full advantage of existing rail and auto roads, it would require a minimum of seven months to travel from end to end of the island overland.

LIVING CONDITIONS

Living conditions are fairly easy as compared with Central or South America or even the Pacific Islands. There are fairly good hotels in all the large ports and the capital, and indifferent ones in a very few of the largest interior towns. When traveling one stays at the village house. Each large native village has one of these for the use of European travelers. It is the duty of the village chief to see that they are provided with food at a reasonable price. Travelers carry their own beds, chairs and cooking utensils, and are accompanied by a cook and boy. Food is very cheap in the back districts, but there is no variety, the regular thing being chicken and rice, with a rare egg or banana. Stores in the larger towns carry a small line of canned goods, but bread is unobtainable outside the largest places. The chief is expected to provide fuel and water free of charge, but expects a tip.

HEALTH

In spite of the high altitude of most of it, Madagascar is decidedly unhealthy. All whites who have been here more than

a few months suffer from periodic attacks of fever, all three varieties of malaria being common. Plague seems to be epidemic and at the time of writing there are serious outbreaks here in Majunga and in Tananarive. No Europeans have died here so far, although there are 6 to 10 cases a day with only 2 recoveries to date. Tananarive reports several European deaths with 68 cases in one day and no recoveries. Intestinal diseases are rather rare, although there is a good deal of dysentery and some typhoid. Europeans become partially immune to malaria in time, so that the attacks are less severe, but never really recover while they remain in the island.

NATIVES

Language. All the tribes speak languages belonging to the same linguistic stock and their dialects are, for the most part, mutually intelligible. The grammar seems to be the same throughout, but there are many differences in the vocabulary. The most divergent tongue is that spoken by the Sakalava of the west coast, which requires a special interpreter.

Culture. The native culture, as revealed by my studies to date, seems to be surprisingly uniform. This is no doubt due to the fact that the natives themselves are great travelers. It is not uncommon to encounter men four or five hundred miles away from their real tribal territory. With the exception of one group on the far southeast coast and certain more or less Arabised tribes in the north and northwest, the ordinary tools and utensils of all the tribes are practically the same. Each tribe has certain specialties, however. The distribution of types of weaving will illustrate this. The weaving of *lambas* (mantles) of domestic silk is practically limited to the Hova, and they are the only ones who weave figures. The Betsileo weave wild silk, cotton, and a little hemp. The Tanala make beautiful lambas of hafotra (a species of bark), but make little use of cotton and apparently weave no silk, although the wild variety occurs in their country. The Bet-simisaraka weave only raffia or a mixture of raffia and commercial cotton thread. The Tsimahety weave raffia and native cotton, but do much finer work than most of the Betsimisaraka and employ different designs. The Sianaka have entirely abandoned

weaving, buying their cloth from other tribes. Each tribe barter its special product to other tribes in return for their specialties, and objects are often passed for hundreds of miles in this way, increasing in value as they go. In general I have found that each important type of native product has a center where it is produced in quantity and can be had for a reasonable price. This tribal interdependence is certainly very old.

The non-material culture is somewhat more diverse than the material, but is also fairly uniform. The greatest differences seem to lie in burial customs and in political organization. Religion and its outward manifestation, the *ody* (charm), are nearly the same everywhere, although the natives are eager to obtain *odys* from other tribes, believing that the foreign witch doctors have more power than their own.

Character. The character of the various tribes differs considerably, necessitating different methods in dealing with them. The Hova, who are still the dominant group, are highly intelligent, and almost uniformly cowardly, treacherous, and dishonest. They can never be trusted unless held by self-interest. They are born traders, willing to sell anything if the price is high enough, and eager to ingratiate themselves with foreigners. The Betsileo are less intelligent, and are also cowardly, but are more honest and will serve a good master faithfully. They are extremely shy on first contact, but are very easy to deal with when confidence has been established. The great difficulty in collecting among them lies in their strong ancestor worship, which makes them unwilling to sell anything they have inherited. The Sianaka are also less intelligent than the Hova, but somewhat more so than the Betsileo. They have much more courage than either, and are direct in their dealings. They are not servile toward Europeans and seem to be fairly trustworthy. The Betsimisaraka are stupid, lazy, and insolent unless kept in check. They have been in fairly close contact with Europeans for the last 300 years and have little respect or liking for them. They are untrustworthy and somewhat thievish, a rare vice among the wild natives. The Tsimahety are moderately straightforward and courageous, and are courteous toward whites, but indifferent. As a tribe they are

rich, holding thousands of head of cattle, and obtaining objects from them is a question of diplomacy rather than money. They are inveterate cattle thieves and sometimes rob and murder merchants passing through their territory, but I have found them absolutely honest in money matters. The Sakalava are by far the bravest of the Madagascar tribes, and are also fairly intelligent. They are extremely proud, and are likely to be surly and insolent. They are well armed, and still cause the government considerable trouble. A lone white man traveling in the more remote parts of their territory is often denied food and lodging in their villages and annoyed in other minor ways. His life and property are usually safe. They hate the Hova much worse than they do the whites and frequently kill them. They are friendly toward Arabs, being partially Mohammedanized, and I am now trying to get an Arab interpreter to accompany me into their territory. They are rich in cattle and care very little for trade, so I fear collecting among them will prove difficult. I have no personal knowledge of the tribes farther south, but from reports their character seems to be much like that of the Tsimahety. One group, the Mahafaly, in the extreme southwest, has never been subjugated by the French, and is said to be the wildest in the island.

LOCAL HELP AND COÖPERATION

Officials. I have found the higher colonial officials uniformly courteous and helpful and in many cases really friendly. There is a strong anti-American feeling here, however, due to the debt settlement and the decline of the franc, and I have had a little trouble with minor officials. I will certainly have a good deal more during the next few months unless the franc becomes stabilized. My dealings with the minor officials have been practically limited to visits of ceremony and requests for bearers. One or two have very kindly volunteered their assistance in my collecting work, and M. Amat, Chef de District at Mandritsara, sent me some old men to use as informants, but as a rule I have had better luck when working independently. The natives are universally suspicious of anything or any one connected with the government.

Missionaries. I have established close contact with all the missionary organizations working here. The most helpful have been Mr. John Sims, head of the Friends Foreign Mission in Tananarive, who has invited me to make his house my home whenever I am in the city, and Mr. D. O. Jones of Imerimandroso, who nursed me through a bad attack of fever. The Norwegian Lutheran and Norwegian American Missionaries have also shown me much kindness and will be of great assistance to me when I am working in the southern part of the island, their special territory. In general I have found the missionaries very useful for first introductions, but surprisingly ignorant of the life of the people among whom they worked and quite unconscious of what was actually going on even among their supposed converts. One of the best of them, who had been in the island fifteen years showed me a collection of charms given him by a witch doctor on his conversion, and was very much surprised to learn that the native had only turned over the boxes in which the charms had been kept, reserving the charms themselves for future use.

Colonists. There are very few white colonists outside the large towns, but nearly all those that I have met have been kind and helpful. As far as I know, there is only one American in the island who is engaged in business, but missionaries with their wives and children give it a total American population of about 28. There are a good many British, especially Mauritians and South Africans, and they consider me one of themselves. Both the French and British have an unshakable belief that I am really a U. S. government agent sent to look over the island with a view to its purchase by the U. S. and are correspondingly anxious to keep in my good graces. The American purchase idea seems to be a regular obsession with all of them.

Académie Malgache. This is a group of accredited scientists who are carrying on investigations along all lines. I have been elected an honorary member, and the other members have helped me a great deal with both information and suggestions as to profitable regions for work. They have placed their library at my disposal, including many unpublished reports and documents. The president, Dr. Fontoynoult, who is a student of Malagasy

religion, and M. Waterlot, who has done the only systematic archaeological work so far carried on here, have been especially helpful.

WORKING METHODS

Experience has shown that very little information or material can be obtained while actually traveling. The best method is to remain in one place for from ten days to a month. I select some town which is a trading-center for the surrounding villages, settle down there, and make friends with the natives. Missionaries are very helpful in this, and a little amateur doctoring and a pocketful of candy are also useful. After five or six days the people become accustomed to me and will allow me to enter their houses freely. People coming to market take home word of me, and I am well received on my first visit to their villages. As a rule I do not buy much during this time, but try to learn the prices actually paid for things by the natives themselves and consistently pay somewhat above this when I do buy. I find that once I have established a reputation for fair dealing the natives very often allow me to set my own price on the objects I want, thus saving much time and trouble. After prices have been established I make a limited use of native collectors, but the best results are obtained by a house to house canvass, with especial attention to garrets and kitchens. I rarely find it necessary to regularly employ informants, for the old people are usually glad to talk. As far as possible, material is catalogued and notes written up each night. Important items of information are checked up by conversation with persons in other villages. Village chiefs and owners of houses where I eat or sleep expect small gifts.

ITINERARY

I arrived at Tamatave January 17th, 1926, and went to Tananarive two days later by the first train. I remained in Tananarive until April 7 (through the worst of the rainy season), then went to Antsirabe, on the edge of the Betsileo country. The town of Antsirabe offered few opportunities for work, so I left it on the 12th, going south to Ambositra, where I remained until the 24th. This region offers fine opportunities for collecting, and

I was forced to leave it before my work was done. I had to visit the north of the island during the comparatively short dry season, and I knew that I could work at Ambositra and farther south even during the rains. I hope to return there in late December or January. I returned from Ambositra to Antsirabe on April 12th and remained there until the 30th in order to attend the great weekly fair. From Antsirabe I returned to Tananarive and remained there until May 18. On that date I went by train to Andreba, at the lower end of Lake Alaotra, and the next day by rickshaw (locally called *Pousse-pousse*) to Imerimandroso at the head of the lake. I worked there, with short trips, until June 10th, when I returned to Andreba and went by train from there to Ambatondrazaka, where an annual fair was being held. Leaving Ambatondrazaka the 12th, I arrived in Tamatave June 13, and remained there, waiting for the east coast steamer, the *Imerina*, until July 10th, a month and five days after the scheduled date for her departure. Leaving Tamatave on the 10th, I arrived in Maronatsetra the 12th, remaining there until the 21st. During this time I completed my Betsimisaraka collections, which had been begun at Tamatave, and got together bearers for the overland trip. On July 26 I arrived at Mandritsara, having finished the first half of my journey across the island. The culture of the Tsimahety, the tribe about Mandritsara, proved to be nearly the same as that of the Sianaka, among whom I had worked at Lake Alaotra, so I stayed a shorter time than I had planned, leaving on August 5th. I arrived at Antsohihy, on the west coast, August 9. From there I took a cattle steamer to Majunga on the 13th, arriving in Majunga the 15th. The regular west coast steamer, the *Bagdad*, had been scheduled to leave Majunga the 15th for the south, but after repeated false notices, is now posted as leaving on September 20th. The plague situation is so serious here that the southern ports have established a rigid quarantine against all passengers and goods coming from Majunga, so that if I should go south with her now I probably would not be allowed to land. I have, therefore, decided to go inland, by way of the Betsiboka river, making side trips into the Sakalava country, including one long trip from Maevatenana to Kandreo and return. From

Maevatanana I shall go to Tananarive, and from there south by train, auto and filanzana, eventually reaching Tulear overland from the rear. Things are so uncertain here that it is impossible to give a more definite statement of my future movements.

WORK AMONG THE HOVA (TANANARIVE, ANT SIRABE, ETC.)

As Tananarive is the capital of the island and the headquarters for most of the missionary societies and large commercial houses, a good deal of my time there was spent in establishing cordial relations with officials, questioning people who had come in from outlying districts, etc. The collections in the Tananarive Museum were studied, and various rare books in the Government and Académie Malgache Libraries were read and extracts copied. Much time was devoted to a study of the native language, a regular teacher being employed.

The Hova in and about Tananarive are all ostensibly Christian, and have been largely Europeanized. Many elements of the ancient culture have entirely disappeared and many others are on the point of disappearance. Nearly all the objects still manufactured by the natives could be bought in the great weekly market. The natives proved eager to sell, and brought old things of all sorts, and examples of the best silk weaving, to my house almost daily. A native collector was sent into the least civilized part of the province to try to find certain objects formerly in use, but was only partially successful. About 600 specimens were purchased, forming by far the best and most complete Hova collection which has so far been assembled. I hope to be able to fill the remaining gaps by having reproductions made of objects which are entirely obsolete, but have found this very difficult, due to the complete unreliability of the natives. The outstanding features of the collection are the textiles, especially the silk lambas (mantles), the stone lamps (now obsolete), certain very rare wooden utensils (obsolete), a practically complete collection of snuff boxes, showing all forms in ordinary use, and a fairly complete set of charm beads, with full information on their use and significance.

Many valuable notes were collected, old Hova and mission-

aries of long experience being used as informants. An outline was made and gradually filled in with details on the material culture, social life, etc. There are many old people whose memory goes back to pagan times, and the material should make an excellent report. Especial attention was apid to the Vazimba legends, and a good deal of quite new material collected.

The people of Antsirabe are largely Hova, but the town lies on the edge of the Betsileo country. The objects sold in the weekly market differ in some ways from both the pure Betsileo and the pure Hova, but incline more toward the former. They have been listed as Betsileo.

WORK AMONG THE BETSILEO (AMBOSITRA AND VICINITY)

The villages about the town of Ambositra proved to be by far the richest collecting field so far encountered. The natives are still quite primitive and carry on many of their old industries, while the fact that they have occupied the same houses for several generations has led to a gradual accumulation of old things in attics and storehouses. They lack the trading instincts of the Hova, and practically all material was obtained by house to house canvassing. The main obstacles to collecting were their shyness and their strong ancestor worship, which made them unwilling to sell inherited objects. These were eventually overcome and a good collection obtained. The wooden utensils and wood carvings are especially valuable and noteworthy, for such things are no longer manufactured. The most striking pieces are an old carved bed, which will be the only one in any museum, and a very old carved box for clothing, which is unique. The textiles are also fine, especially those made from wild silk and from hafotra bark. In the latter only old vegetable dyes have been employed, giving wonderfully soft and beautiful colors. Some very fine old mats and baskets were bought from Radaniel, the last of the Betsileo chiefs. A remarkable black jar, decorated with bold designs in applied strips of clay, and a cream-colored bowl decorated with designs in red represent the high points in their pottery-making. A little jewelry was also obtained, including old silver beads of a peculiar type, massive silver neck chains, and old coral and silver earrings.

About 375 pieces were bought, but the collection is still incomplete, and I plan to return within the next few months.

Many notes were made on various industries, but little other information was obtained, due to the reticence of the natives. There is a good deal of published information on them, however, so that the loss is not serious. A striking feature of their country is the great number of large memorial stones, precisely like European menhirs, which are to be seen on all sides. The erection of these monuments is still going on. I saw a small one, with an inscription, which had been raised to commemorate Betsileo killed in the great war. Their tombs are large and elaborate, and there are many sacred places. In one of my trips I came upon a figure of a snake nearly thirty feet long which had been cut in the hard clay of a hillside, but could get no information about it.

WORK AMONG THE SIANAKA (LAKE ALAOTRA)

The material culture of the Sianaka is much simpler than that of the Betsileo. Their artifacts are well made, but are limited to a few forms. They do some very clever carving of figures in the round. Weaving has been entirely given up, but they make the best mats in Madagascar. About 250 specimens were collected, the most important objects being a number of very fine mats, carved miniature paddles (formerly a badge of rank), a set of silver jewelry belonging to the family and worn only at weddings and funerals, and a fine collection of charms and sacred objects, including two sorcerer's staves. I was also lucky enough to get a few examples of the ancient weaving in raffia and one piece of wild silk weaving which is different from anything I have seen elsewhere. Three small shoe-shaped jars, used by witches and medicine-men for brewing potions, are of especial interest, for they are identical with a type of pottery found in the ruins in the southwestern United States. The Sianaka collection is practically complete and I believe further work would add little if anything to it.

A great deal of valuable information dealing with the native religion, especially with the practices of wizards, was obtained. Unfortunately my best informant was suspected of poisoning me

when I had a sharp attack of fever and was killed by the other natives, who were afraid of trouble with the government. Notes were also made on native marriages, funerals, etc., and on industrial processes. It was discovered that the designs used in mat making were all named, and in some cases seemed to be used with magical intent. This has not previously been reported for Madagascar, nor have I found indications of it elsewhere. I feel that my work with the Sianaka has been completed satisfactorily.

WORK AMONG THE BETSIMISARAKA
(TAMATAVE AND MAROANTSETRA)

My work among the Betsimisaraka has been less satisfactory than that with any other group. Their material culture always has been poor, and there have been European settlements along their coast since the latter part of the seventeenth century, so that very little is left at the present time. They make no pottery, as their country is sandy, importing the little they need from the Sianaka to the west. Folded leaves are used for plates and spoons, being renewed at each meal. They do no wood carving, and their mats and baskets are mostly poorly made and without decoration. Their only important product is fine raffia cloth, now usually made from a mixture of raffia and imported cotton thread. A good collection of these raffia cloths was obtained, together with one of the crude treadle looms on which they are now woven. This type of loom is a rather recent innovation, the idea having been taken from the Arabs. The older type of loom is identical with the Hova one. Specimens of all the utensils in ordinary use were collected, also various musical instruments, a paddle, fish traps of two types, etc., making a total of 88 pieces.

A little information on technical processes was obtained, but hardly anything else, due to the complete collapse of the ancient social organization and religion.

WORK AMONG THE TSIMAHETY
(MANDRITSARA AND VICINITY)

The work among this tribe was fairly successful. The ancient culture was simple, but it is still almost intact. No weapons were obtained, for the natives feared that if they showed such things

to me they would be seized by the government, but the collection is otherwise nearly complete. The most important native products are very strong, flexible baskets of raffia, and raffia cloths for lambas and skirts. The cloths are often mixed with cotton, either commercial or native, and are the finest I have seen so far. Lambas are usually in natural color, a light tan, with broad striped borders. They are traded as far as Tananarive and bring high prices. A black, graphite-coated pottery of good grade is made, and there are a few cleverly carved staves or canes. Their mats are identical with those of the Sianaka, although usually somewhat coarser. They still make considerable use of charms, and a fine collection of these was obtained, including some unique pieces. The most remarkable are the complete equipment of a native doctor, a warrior's charm necklace containing rare beads and silver cornucopias for charms, a large silver horn containing charms, a small figure into which sickness was drawn, and two charms for killing enemies. One of these, consisting of 3 charms wrapped up together and placed in a basket, is of the most dangerous type, and could not be kept in the owner's house, as it would cause his death. A man who thought its owner was operating against him showed me where it was hidden on condition that I carry it off, which I did.

Some very valuable information was obtained from old men in the various villages, that dealing with the Vazimba, or first inhabitants, being the most important. According to them, the Vazimba were the actual ancestors of most of their tribe. They lived in caves or dugouts in the clay hills, cultivated rice, and fought with the blowgun and axe. This would indicate that their culture was Malayan rather than African. Later people from Africa came and conquered them, introducing the bow and arrow and probably cattle. An excellent description of the old bow and arrow was obtained. This is of considerable importance as the use of the bow as a weapon in Madagascar has frequently been questioned. A good deal of information was also obtained on ancient burial customs, social organization, and religious beliefs and practices. The natives denied true ancestor worship, which, if true, would differentiate them from the other Malagasy. Slightly over 250 objects were purchased or donated.

WORK AMONG THE COAST SAKALAVA OF THE NORTH
(ANTSOHIHY AND MAJUNGA)

Antsohihy lies well within the Sakalava country, but there are comparatively few natives in the town. It is a trading-center mostly inhabited by Indians and Arabs. My stay was too short to establish many contacts with the natives, but I was able to buy a few good things from country people who had come in to trade. Majunga is quite a large civilized town, with a large Arab, Hindu and White population, but there is a native village in easy reach, and I have been highly successful in collecting there. The severe epidemic of plague now under way has paralyzed all business, and many of the natives are badly in need of money. A good many of them are trying to get away on small coasting boats and chows, which takes ready cash, and they are willing to sell almost anything. As I have been inoculated against the plague I am not particularly afraid of it, and I have made a practice of visiting the quarters of the village where it was worst and offering to buy jewelry, etc., from natives who were in danger and anxious to get away. In this way I have gotten six raffia prayer rugs and much jewelry. The rugs are made by Mohammedanized Sakalava for their own use, and at ordinary times they will not sell them to Christians. I find that most of the whites here have never even seen them. I feel that the jewelry collection is perhaps the most remarkable thing I have secured on the expedition. The Sakalava are a rich tribe, and until the beginning of the war it was their practice to have gold and silver money that came into their hands worked up into massive jewelry. Since the drop in the value of the franc the Hindus have been buying this up for the sake of the metal, and in another couple of years it will be nearly all gone. Because of the plague, the natives sold me many pieces that were treasured heirlooms. Among other things I have gotten two necklaces of big gold beads, 2 solid gold ear plugs of exquisite filigree work, 6 ear plugs of gold and silver, quantities of silver ear plugs of all sorts, many beautifully worked, a silver headband, and a large number of necklaces, chains, bracelets and anklets, showing all the styles in use. The weight of the metal is about 30 lbs., and the specimens have been bought for less than their actual value as

silver. The collection will make a fine exhibition, and I am convinced that it can never be duplicated unless certain pieces are copied. The natives also make very artistic painted pottery, and a good collection of this has been obtained. With the Sakalava material that I hope to get during the next two months it should be possible to make the Sakalava exhibit one of the outstanding features of the Madagascar hall. 275 pieces, over 200 of which are jewelry, have been collected to date (September 9th).

SUMMARY

I believe that my work among the Hova, Sianaka, Tsimahety, and Betsimisaraka is particularly completed, although I still hope to obtain more information on ancient Hova beliefs and practices and to get reproductions of some obsolete objects. My work with the Betsileo is about half done, and that with the Sakalava only begun. A great deal of new information has been obtained, and this points to some rather startling conclusions. Evidence is piling up that the Malay element was the first to occupy the island, although it has been universally believed that the aborigines were Negroes. The work of collecting has been highly successful, with a total of about 1750 specimens purchased to date. The collections include all the ordinary forms of tools and utensils, with many rare objects and good collections of the specialties of all the tribes visited. Although I hope to at least double the number of specimens before my work is finished, I am under the impression that the collection as it now stands is by far the best Madagascar collection in existence. If the work should be terminated to-morrow, I should still feel that the expedition had been a success.

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DISPOSAL OF THE DEAD

By A. L. KROEBER

SOME years ago, in assembling data on methods of disposal of the dead in aboriginal California, I was struck by the fact that the distribution of burial and cremation customs failed to conform to the distribution of other culture traits in the area and was unusually irregular in itself.¹ The lines separating the two mortuary practices on the map ran across rather than with topographic, climatic, and floral boundaries. They departed considerably from the approximately definable limits of culture areas or sub-areas. And there was no agreement whatever with the distribution of other customs connected with death, such as name taboos, mourning restrictions, property destruction, or the public mourning anniversary ceremony. If the distributions were to be interpreted as is customary, it was evident that methods of corpse disposal had had a history that was less simple and regular, and more fluctuating, than most elements of native Californian culture.

Archaeological evidence, though incomplete, partly confirmed this conclusion. Burials have been found in the territory of several groups practising cremation at the time of discovery: Salinan, Costanoan, Coast Miwok, Maidu, Yokuts. Conversely, mounds on Humboldt and perhaps on San Francisco bay showed cremated remains in addition to the usual interred ones. This may not seem a specially impressive list, but it must be remembered that native California is a region of unusual cultural stability, and that ordinarily the archaeological and ethnological data from any particular area in the state are in close agreement.

As there are bound to be variations in the stability of customs, a tendency of corpse disposal practices to be changeable would be of no special moment, were it not for the powerful affects released by death and the fact that affects are not expressed

¹ Handbook of the Indians of California, Bureau of American Ethnology, Bulletin 78: 841-843, 900-901, map fig. 70, 1925.

spontaneously in culture but in conditioning. The naive assumption would probably be that a charging with affect would cause an established custom to be adhered to with special tenacity, and thus make for its stability. But as there need be no positive relation between intensity and permanence of emotion, or the intensity of an emotion and its manifestation in behavior, a theoretical problem is raised. It is evident, for instance, that our culture is at present divided between interment and cremation, the latter practice being of recent origin, on the increase, but still in the minority. Sentiment is in part indifferent; but considerable elements of our communities feel a quite powerful preference for one or the other of the conflicting usages. Is there then perhaps inherently less stability in affect-laden customs, or is such stability as they possess due to factors other than the degree of associated emotion?

Rivers has called attention to a situation in Australia analogous to that in California. He says:

Few customs of mankind take so firm a hold of his imagination as his modes of disposing of the bodies of his dead. . . . It is difficult to see in the environment of the Australian anything which could have led him, unaided and untaught, to evolve a variety of funeral rites. What, as a matter of fact, we find is that nearly every one of the chief known methods of disposal of the dead is practised in Australia. We find inhumation in the extended and the contracted positions, we find preservation on platforms, on trees and in caverns. There is embalming though of a simple kind, and, lastly, there is cremation. . . . People do not adopt new funeral rites merely because they see or hear of them elsewhere.²

Rivers goes on to argue that this condition is "the outcome of permanent settlements of strangers" in Australia. This explanation is part of a plan for resolving culture variations by the mechanism of contact of migrant bodies of people, rather than through more intricate and subtle modes of culture contact. This particular argument serving other ends, it need not be further examined at the moment; the fact of diversity and change in Australian mortuary customs, however, is of bearing.

Variety and change also characterize the late prehistoric

² W. H. R. Rivers, *The Contact of Peoples*, in *Essays and Studies* presented to William Ridgeway, 474-492, 1913 (passages cited, 480, 481).

periods of Europe. Déchelette has reviewed the salient facts with his usual lucidity. The Palaeolithic and most of the Neolithic interred; but cremation occurred in Finistère, Aisne, and Marne in the latter period; and desiccation, contracted burial, secondary burial all are established. "None of the mortuary customs of the Neolithic seems to have had constant usage in Gaul." The belief that cremation was introduced in France by a wave of bronze age invaders can no longer be maintained. In fact, cremation did not prevail in France until the fourth phase of the bronze age; although Brittany, following its Neolithic beginning, burned the dead during the first and second phases. In Greece, cremation begins with the early iron age, later Mycenaean tombs still containing burials. In western Asia cremation was unknown or rare, whereas India adopted it early. In central Europe, from Scandinavia to Italy, cremation got the upper hand in the second bronze phase. In north Germany, it remained in vogue into Roman times; in south Germany and France, burials often replace urns of ashes in the late finds. Cremation evidently originated "spontaneously" (independently) among several peoples of Europe and Asia.³

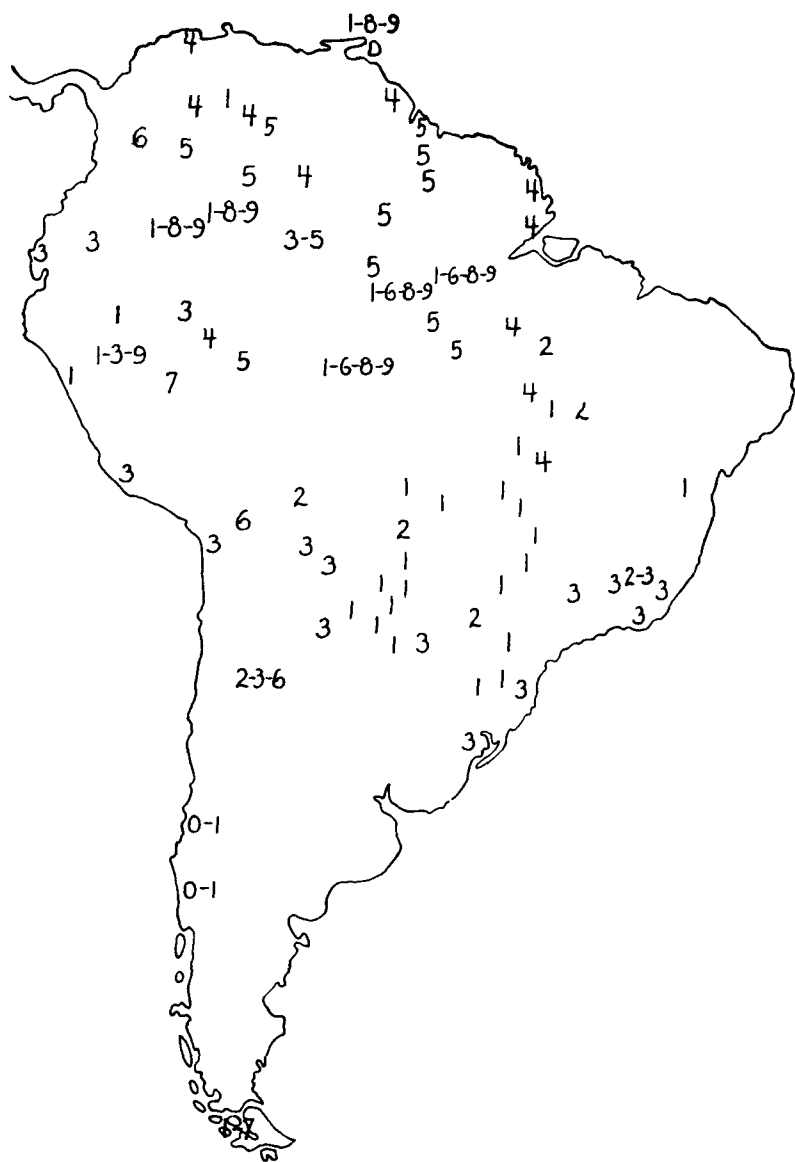
For South America, there is Father W. Schmidt's instructive assemblage of data, marshalled in support of still another interpretation, the *Kulturkreis* theory.⁴ His map is herewith reproduced in somewhat altered form. There are some evident centers of frequency or characterization for the various mortuary usages, but scarcely any practice has a well limited distribution, so that the history of their interrelations is almost certain to be complex and custom must often have changed.

Father M. Küsters has made a more intensive study of African funerary practices.⁵ The distribution of a few of his items is reproduced in the accompanying map. It appears that certain habits, such as air burial in trees or scaffolds, and simple exposure or discarding of corpses, have an exceedingly irregular distribution

³ J. Déchelette, *Manuel d'Archéologie*, 1: 465, 471, 1908; 2: 133, 154, 159, 1910.

⁴ *Kulturkreise und Kulturschichten in Sudamerika*, *Zeitschrift für Ethnologie*, 45 1014-1124, 1913 (map, p. 1076).

⁵ *Das Grab der Afrikaner*, *Anthropos*, 14-15: 639-728, 1920-21; 16-17. 183-229. 913-959, 1921-22.



Disposal of the dead in South America: adapted from Schmidt. 1, simple burial; 2, secondary burial; 3, urn burial; 4, urn reburial; 5, house burial or reburial; 6, mummification; 7, cremation; 8, secondary cremation; 9, eating of ashes; 0, scaffold exposure.

in Africa. Other practices show some tendency to group on the map: mummification in the West African culture area; water burial in the area of Madagascar, the opposite coast region, and the headwaters of the Nile and Congo; cremation in the part of the continent east of longitude 10 east of Greenwich. In each of these instances, however, there are scattered occurrences outside



FIGURE 2.

Disposal of the dead in Africa south of latitude 20° north—selected from Küsters. A, air burial (in trees, on scaffolds); F, fire, cremation; M, mummification; W, water burial; broken lines, limits of simple exposure of discarding of corpse.

the regions of characterization. Küsters reviews also burial in graves with roofs or niches, in houses or burial huts, under rock piles, in urns, secret and partial burial, unflensing of the bones, and other methods. The assemblage of these on his original map makes this bewildering in its complexity. Of particular interest are the frequent limitations of a particular method to a particular

social class, so that several methods coexist in one tribe, and the same method has different applications in successive tribes. Thus, river burial is sometimes reserved for chiefs, sometimes for the drowned, sometimes is the normal practice of a group. Tree and platform burial is in certain populations restricted respectively to musicians, magicians, the bewitched, the lightning struck, criminals, and kings; cremation is generally reserved for criminals, but also occurs as the usual practice; exposure is variously in usage, according to tribe, for the corpses of criminals, slaves, children, the common people, the entire population. These variations between adjacent peoples, and the numerous instances of coexistence of several practices within one population, constitute a powerful argument for instability. They virtually prove change where ordinary intertribal distributions only indicate it. A tribe following three or four methods, and in contact with tribes that follow other methods or employ the same methods for different populational groups, can scarcely be likely to adhere long to its customs of the moment without alteration.

These instances perhaps suffice to establish that disposal of the dead often shows a fluctuating history instead of the relative stability which a first judgment might attribute to it. From this follows the generalization that intensity of feeling regarding any institution is likely to be a poor criterion, if any, of its permanence. Emotion evidently attaches secondarily to social behavior much as thought does. The completeness and plausibility of a rationalization are no index of the reality of its purported motivation; the immediacy and intensity of emotion concerning a cultural practice are no index of the origin or durability of that practice. The stimulus of such an emotion may be a physiologic or "natural" situation, to which a social practice also relates. The emotion or some of it promptly adheres to the practice. But it has not caused the practice; it evidently does not maintain it; and it attaches itself to a new practice as soon as this, from causes which may be relatively uncharged with emotion, displaces the older practice.

The further question whether affect-laden practices are not perhaps actually more unstable than emotionally low-toned ones,

cannot be answered summarily. There are certainly instances of mortuary habits that have continued for long times with only minor modification: in dynastic Egypt, for instance; in most of Europe during most of the Neolithic; in all but the fringe of Pueblo culture.⁶

More fruitful, perhaps, is a consideration of the type of motivation or historic causality that influences modes of disposal of the dead. Here it appears that a feature which is pretty likely to characterize mortuary practices is their dissociation from certain large blocks of cultural activity, especially those having to do with material and economic life, its subsistence and mechanical aspects. That is, disposal of the dead has little connection with that part of behavior which relates to the biological or primary social necessities, with those activities which are a frequent or constant portion of living and therefore tend to become inter-adapted and dependent one on the other. On the other hand, disposal of the dead also does not lend itself to any great degree of integration with domains of behavior which are susceptible of formalization and codification, like law, much of religion, and social organization. Standing apart, therefore, both from the basic type of activities which mostly regulate themselves unconsciously, and from those which largely involve relations of persons and therefore become socially conscious and systematized, disposal of the dead falls rather into a class with fashions, than with either customs or folkways on the one hand, or institutions on the other. It does not readily enter intrinsically into the inevitable integrations of the bases of life nor into attempts at wider systems. In their relative isolation or detachment from the remainder of culture, their rather high degree of entry into consciousness, and their tendency to strong emotional toning, social practices of disposing of the dead are of a kind with fashions of dress, luxury, and etiquette.

It may be added that in so far as mortuary practices may be accepted as partaking of the nature of fashions, they will tend to

⁶ A. V. Kidder, *An Introduction to the Study of Southwestern Archaeology*, Phillips Academy, Andover, 1924.

discredit certain interpretations based on them. Rivers' contention that the variety of Australian practices is to be construed as due to intrusion of migrant groups certainly falls to the ground. Schmidt's employment of such practices as indicative of the spread of hypothetical blocks or complexes of culture becomes less convincing. And Küsters' inquiry into motivation, objectively founded as part of it is, can hardly be followed all the way if fashion impulses have moulded methods of disposing of the dead as extensively as it would seem they have.

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THE CHINESE FAMILY: ORGANIZATION, NAMES, AND KINSHIP TERMS

BY CHING-CHAO WU

FAMILY ORGANIZATION

TO OCCIDENTALS the word family connotes a group of people consisting of husband, wife, and children. This, however, is not true in China. A typical Chinese family, as Maclagan puts it, "might consist of father, mother, sons, daughter-in-law, and grandchildren."¹ To have five generations living under one roof is not rare in China because of the custom of early marriage.

After the death of parents, the brothers may break up the family and live separately. They may still live together in the same household if they choose to do so, in which case authority is vested in the eldest brother. He is responsible for the maintenance of every member of the family and has the right to demand that other members of the family turn their earnings into the common purse to be used for the current expenses of the whole family. In practice, his authority is not absolute. Important questions of the family are not decided by him alone, but by the concurrent opinion of all the adult male members of the family.

The Chinese family is seldom an independent unit, but a member of the greater-family. In the Chinese village, families bearing the same surname live together. The members of the greater-family generally number hundreds and sometimes thousands. They have a common ancestral temple which is the center of their social and religious life. Whenever a person of the greater-family dies, a tablet made of wood bearing his or her title and name is put in the shrine of the ancestral temple. The ceremony of ancestor worship² is conducted in the ancestral temple, usually

¹ *Family (Chinese)* in Hastings, *Ency. of Religion and Ethics*, Vol. v, p. 730.

² According to Mr. P. L. K. Tao, "ancestor worship did not originate from the dread of ghosts, nor is it an animistic lottery for securing material welfare or advantage. Ancestor worship is rather the expression of an instinctive craving to trace the origin

on certain festivals and on the anniversary of the birth and death of each ancestor. The ceremony is rather simple. Every family brings dishes and wine to the ancestral hall, putting them on the table. Then every member of the family, facing the table, makes three bows to the imagined spirits of the ancestors. At the same time incense and paper money are burned.

In the ancestral temple, many big tablets of honor hang on the wall. They may be compared to the monuments of western countries. On each of these tablets are recorded the honorable and admirable deeds of the worthy members of the ancestral temple. For example, a man of high political achievement will, at his death, be honored by his fellow kinsmen by having his name and deeds recorded on the tablet. Such monuments have, it is believed, a powerful stimulating influence on the minds of the children who hear the stories of their great ancestors after each rite of ancestor worship.

The greater-family is well organized. A board of elders consisting of the oldest member of each family is in charge of the greater-family affairs. At a certain time of the year a regular meeting of the board is held. Among other things, the birth of a male child and marriages are recorded at this time. These will later on be transferred to the genealogical record³ which is made of two parts: first, diagrams of names, second, biographies. The genealogical record is revised generally every sixty years, so that new names and biographies may be added thereto. After the revision, the record is printed and distributed among the families.

The board of elders also takes care of the property which belongs to the greater-family as a whole. The income from the

of the self. . . . Every Chinaman loves to trace the long history of his own family thinking of himself as a transitional life linking up the past and the future. . . . On the whole, ancestor worship is not a blind worship: it is respect for the past, gratitude for what the past has handed down, admiration of the good example of the past." See his article on "The Family System In China, in *The Sociological Review*, 1913, Vol. 6, pp. 47-54.

³ Dr. Yu-Yue Tsu remarks that "the families of the clan (meaning thereby the greater family) acknowledge a common male ancestor or ancestors, whether real or adopted, and are thereby held together and known by the common family name. Genealogical records are carefully kept in order to substantiate claims of clan privileges, and to regulate the degree of kinship." See his *The Spirit of Chinese Philanthropy*, p. 75.

property is used to defray the expenses of ancestor worship as well as for educational and philanthropic purposes.

To illustrate the last point the case of the *Van* estate may be cited. In the Twelfth Century a member of the *Van* greater family⁴ established an estate consisting of farm lands, farming implements, a granary, and some living houses. The objects of the estate were to relieve the members of the greater-family from poverty and destitution, to encourage the education of the young, to reward virtue, such as filial piety and virtuous widowhood, and to maintain the solidarity of the greater-family. Certain persons in the greater-family received special grants under specified conditions. They were: students pursuing or preparing for a literary career, aged persons and widows.

The board of elders also has judicial power. When there is a dispute between two families, they refer the matter to the board for decision. The board of elders then calls a meeting in which not only the elders of the board but all influential members of the greater-family take part. The two parties present their claims and arguments, and, after discussion, persuasion, and compromise, a certain agreement is brought about. Such agreement has the sanction of public opinion of the greater-family, and the contesting parties generally abide by it.

The punishment which the board of elders can impose on the members of the family are of various sorts. It is said that in some parts of China the board of elders has the power of using capital punishment. This, if not untrue, is extraordinarily rare. In general, for misdemeanors, the punishment ranges from reproach to dismissal from the ancestral temple.

Such is the general feature of the Chinese family. For the last few decades changes have been going on in this system. The conditions which bring about this change are: contact with the West, the slow but sure emancipation of woman, and the industrial revolution. The trend is evident; but what final shape the Chinese family will in the future assume, is, as yet, very hard to tell.

⁴ For a more detailed account see Dr. Tsu's book, pp. 79-83.

NAMES

In China, not only persons have names, but also the family and the greater-family. In every main dwelling house of the family, at the center and below the ceiling, is a tablet bearing three Chinese characters, usually the name of the family. The third character is universally the word *tong*⁵ which means literally the "house" or the "hall." The first two characters are chosen with care. Some choose two words which express the wish of the family, for example, *Pei Yuan*, which means "educating the descendants," or *Shih Tsu*, which means "perpetuation of the line." Some choose words which connote desirable qualities; for example, *Chien Ho*, which means "goodness and peace." The family name is used on such occasions as erecting a tombstone or marking the implements possessed by the family.

Like the family, every ancestral hall has a name, which is also the name of the greater-family. Three characters make up the name, and the third character is also invariably the word *Tong*. As every greater-family has an ancestral temple, and there are thousands of them even in one district or county, a name for each is necessary in order to avoid confusion. In certain districts of China it is the custom for people to print their greater-family name on the lantern, so, in the night, when one passes a village with lantern in hand, the people immediately know from what village and family he comes.

The name of a person generally consists of three characters. The first character is his surname, the second and third characters his personal name. There are exceptions. Sometimes one finds a name of two or four characters. In the former case, it is because the person chooses only one character as his personal name; in the latter case, it is because the person's surname happens to be of two characters. Contrary to the practice of Europeans, the Chinese put the surname first.

⁵ This, however, should not be associated with a kind of warfare which is very common in the United States and which is known as *Tong* war. *Tong* war in the United States is carried on between two Cantonese unions which are economic in character. Every Cantonese union in this country has a name, such as *On Leong Tong* or *Hip Sing Tong*. That is why the warfare between them is known as *Tong* war.

The fact that the Chinese have more than one name puzzles foreigners. When a child is born he is given at once two names. One is called *Yu Ming*, or "milk name." This name consists of one or two characters only, without the surname attaching to it. It is used by his parents and relations. The other name is called *Hsueh Ming* or "school name" because the boy uses it in the school and is known to his teachers and friends by that name. It is also called *Pu Ming* or the "genealogical name," because only this name is put in the genealogical record which most families or greater-families keep. This name generally consists of three characters: the first character is his surname; the second character is his *Pei Ming* or "rank name," which he possesses in common with his brothers, his cousins on the father's side, and all members of the same generation of the greater-family; the third character is the only name which his parents need to choose for him and half of this character or name he possesses in common with his brothers.⁶

When the child reaches the age of twenty, or, as the practice goes, much earlier than that, he may take another name which is called *Tze* in Chinese. This consists of two characters. The *Tze* is always selected with reference to the genealogical name. For example, suppose one's genealogical name is *Wu Ching-Tung*, he may use *Shao Pu* as his *Tze*. *Shao Pu* means "wide learning," an interpretation of the word *Tung*. After the selection of a *Tze*, a man is no longer addressed by his friends by his genealogical name. He is called now by his *Tze*. But, this does not mean that the genealogical name is no longer functional. The bearer still uses it in writing letters to his elders, in signing contracts, and in official matters.

An average Chinaman possesses the above mentioned three names. As a rule all three names are chosen for him by his parents, but as the name is a part of one's personality, people in China are

⁶One needs a little knowledge of the Chinese language to understand the significance of it. Many Chinese characters consist of two parts, hundreds of characters having one part (either left or right, upper or lower) identical with left or right, upper or lower part of another character. Therefore, it is easy for the parents to choose names for their children by using characters having one part in common.

very particular about their names and like to have the one which will be appropriate to their tastes. So, besides the milk name, the genealogical name, the *Tze*, one may have a *Hao*, or "style." The *Hao* is selected by the bearer and consists of two characters. He may have a *Pieh Hao* or another style which consists of three or five characters. *Pieh Hao* may be compared to the *nom de plume* used by a literary man or an artist.

It is also the custom in China to address a person by his title, as people in the United States call Mr. Calvin Coolidge "President Coolidge" or Mr. Theodore Christianson "Governor Christianson." Another practice is not found in western countries: the great man is called by the name of the district (which corresponds to the county in the United States) in which he was born. Thus, *Tuan Chi-Jui*, the present President of China, is called *Tuan Ho Fei*, *Ho Fei* being his native district. This is a great honor; not more than a dozen Chinese are thus called by their fellow countrymen.

Before the Twentieth Century it was the custom for the Imperial House to bestow a posthumous title upon great officials. Only people of worthy achievements received this honor. A great teacher, at his death, was honored by his students with a posthumous title. This practice seems to have ceased since the establishment of the Republic.

It is possible, then, for a Chinaman to have eight names: (1) milk name; (2) school name or genealogical name; (3) *Tze*; (4) *Hao*; (5) *Pieh Hao*; (6) official title as name; (7) native district as name; (8) posthumous title.

KINSHIP TERMS

1. Father *Fu*
2. Mother *Mu*
3. Grandfather
 - a) Father's father *Tsu Fu*
 - b) Mother's father *Wai Tsu Fu*
4. Grandmother
 - a) Father's mother *Tsu Mu*
 - b) Mother's mother *Wai Tsu Mu*

The Chinese have different kinship terms for father's and mother's parents. There is no kinship term for the parents of *Wai*

27. Brother-in-law
 - a) Elder sister's husband *Chah Fu*
 - b) Younger sister's husband *Mei Fu*
 - c) Wife's elder brother *Lei Ko*
 - d) Wife's younger brother *Lei Ti*
 - e) Husband's elder brother *Pei*
 - f) Husband's younger brother *Shu*
 - g) Husband of wife's sister *Lin Chin*
28. Sister-in-law
 - a) Elder brother's wife *Shao*
 - b) Younger brother's wife *Ti Fu*
 - c) Wife's sister *Yi*
 - d) Husband's brother's wife *Chu Li*
 - e) Husband's sister *Ku*
29. Daughter-in-law *Shih Fu*
30. Son-in-law *Lii Hsu*
31. Husband *Fu*
32. Wife *Chieh*

The above are norms.⁷ In practice we find many deviations. For example, a man, instead of calling his father *Fu*, may call him *Baba* (papa) or *Yieh*. Again, instead of calling father's oldest brother *Pei Fu*, one may call him *Ta Pei* which means "first *Pei*." If his father has another elder brother, he may call him *Erh Pei* which means "second *Pei*." Thus Chinese family relationship is well defined and no one misunderstands another when he refers to a particular kinsman.⁸

There is a combination of kinship terms and names. A Chinaman will probably not call his elder sister simply *Chah*. That is too indefinite. Usually, in addressing her, he combines her milk name with the name *Chah*. For example: *Yu Ko Chah*, *Yu Ko* being her milk name. Likewise, he may combine his elder brother's name, *Tsu Mo*, with the kinship term *Ko*, and call him *Tsu Mo Ko*. So it is with all of the terms.

⁷ Some terms need explanation in order to avoid confusion. The pronunciation of the character for husband is similar to that for father, and to the second character for daughter-in-law, but the three characters are quite different. Again, the pronunciation of the character for son is similar to that for brother's son; the pronunciation of the character for grandson is similar to the second character for sister's son, but the characters are not the same.

⁸ This is not the case in the United States. When the American speaks about his uncle, we are not enlightened as to which of the five classes of uncles he refers.

In America husband and wife call each other by their personal names. In a face-to-face talk the wife does not address her husband as "my husband." This is the custom in China, also. But the Chinese, in giving up the use of the terms for husband and wife, have not found any substitutes for them. So in conversation between husband and wife, each simply proceeds to talk without using any term of designation when addressing the other. If a woman is talking with some one else, she is greatly embarrassed in referring to her husband. Sometimes she refers to him as "So and So's father," "So and So" being; of course, her son's name. Usually she refers to him simply as "he." When you hear a woman talk about "him," you know that, following convention, she is referring to her husband. She is too modest to speak about "him" as "my husband." Only the Chinese understand the underlying psychology.

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BOOK REVIEWS

METHODS AND PRINCIPLES

The Relation of Nature to Man in Aboriginal America. CLARK WISSELER. Oxford University Press: New York, 1926. 248 pp.

The problem of the character and extent of the influence exerted on man by his environment, has for long attracted deserved attention. Opinions, however, have been rather strongly opposed. Some have believed that the power of environment to mould not only the cultural but also the physical development of man has been the dominant factor of human history. Others, on the contrary, have felt that the potency of environment was greatly overstressed, and that except for a few obvious restrictive effects, it exerted but little direct and a very variable indirect control. The advocates of the dominance of environment have usually approached the problem and sought to establish their case, by analyzing various kinds of environment and then attempting to show a clear correlation between these factors and the cultural or physical characters of the inhabitants. Dr. Wissler in the present volume attacks the question from a different angle, that of the geographical distribution of anthropological traits.

The method followed is to select a series of traits, plot their distribution on the map, and then to show that these traits all cover continuous areas and tend to take the form of concentric zones surrounding a central nucleus, where the trait is most highly specialized or most frequent. It is then assumed that the peripheral zones, which are held by the simplest and most generalized form of the trait, represent its primitive form, and that the successive specializations as one approaches the central nucleus, are historically sequent developments of this primitive type, all of which have originated within the nuclear area and diffused outward in all directions. From the mere inspection of such a plotted distribution, then, one can determine the center of origin of the trait and the relative time sequence of its development and diffusion. Comparing the distribution of several traits, Dr. Wissler then finds that their centers are not only more or less congruent, but lie within a cultural area, and thus mark the region in which this particular cultural type reaches its highest expression. Seeking the cause for the concentric, zoning of traits, the author finds the culture area to be marked by

a definite type of environment, and that the characteristics of this ecological region are most completely developed at the cultural and somatic focus. The ecological, cultural and somatic centers thus coinciding, it is argued that a definite correlation is established. The environment is thus the determining factor in both culture and physical type, and these are most completely adapted to and dependent on their environment where it is most strikingly dominant. The final conclusion then is, that "human traits have geography because they are adjusted to external conditions"; in other words, environment is the source and conditioning force of both the cultural and physical characters of man.

The most extreme environmental position is thus taken by Dr. Wissler, since by declaring that both culture and physical type are the product of environment, he implicitly denies any significant genetic or historical relation between what are ordinarily spoken of as racial types. According to his view, any particular combination of physical traits which may be regarded as constituting a definite type, may arise independently anywhere. Dr. Wissler has presented his material and developed his theory in his usual clear and convincing fashion, and his book will appeal strongly to the layman. To anthropologists, however, it will, I fear, be something of a disappointment, for they will feel that, carried away by his enthusiasm, Dr. Wissler has dealt with his subject in an unfortunately one-sided manner, and will note that he has been regrettably careless at times as to facts, methods of presentation, and reasoning.

Before discussing the broader aspects and implications of the theory set forth, it is unfortunately necessary to refer to some points in regard to data and methods, which seem open to criticism. In the first place one finds the data used are sometimes antiquated, incomplete, or obscure. Thus fig. 5, showing the distribution of the chief mound clusters, is based solely on Thomas's map, issued thirty-five years ago, and quite ignores the large amount of work accomplished since. One wonders, in connection with fig. 6, what are the sources for the data on which the distribution of burial mounds is based. It can hardly be Thomas's maps, since in many of the states included within the area, these do not indicate a single burial mound, and it is an archaeological commonplace that such mounds exist far outside the limits shown, with a frequency as great as within them. One would also like to know the evidence for a "constant frequency" within any such extensive area. It is true that in

these cases, while greater accuracy might well be expected, the errors do not materially affect the result, but as much cannot be said in regard to the treatment of the outrigger canoe. For here, although Dr. Wissler purports to discuss the distribution of outrigger canoes and outrigger attachments, he deals only with a restricted portion of the immense area occupied by these traits. Were the whole area included the distributions would be seen to lead to quite different conclusions. Furthermore, Dr. Wissler has wholly omitted one of Haddon's important types of attachment and has given incorrectly the map supposed to be copied from Haddon's paper, having transposed areas 1 and 2 and failed to indicate outlying areas of type 1 in Melanesia.

Scattered through the book there are numerous aggravating, if careless, errors. For instance, there are many cases of contradiction between text, tables, and figures, e. g., figs. 17 and 19, fig. 26 and page 69, fig. 43 and pp. 158 and 159, etc. The first instance is a good example, for here although the first figure gives no data whatever for northern Asia or Europe (except France and Greece where the Mediterranean form of arrow-release is shown) the second gives the whole of this great area as Mediterranean—except Greece! It also shows all southern China and Tibet as Mediterranean, while fig. 17 indicates the Mongolian form. Again, there are occasional unqualified statements, such as that "all" living Indian tribes have straight, black hair (p. 156), or direct misstatements, such as that labrets are worn in the upper lip by the Alaskan and Northwest Coast tribes (p. 62). In some other cases, statements are made as facts, which are really only inferences based on rather meagre data.

More serious, however, is the false idea conveyed by some of the schematic diagrams, for these convey to the unprofessional reader a wrong impression, which the text further emphasizes. For example, fig. 32, p. 93 and the accompanying text suggest a type and regularity of distribution quite contradicted by the actual facts. For if the tribes concerned are plotted in their actual locations, one finds not a well-defined central nucleus surrounded by concentric zones, but a main "center," on the north and south of which there are two separate groups showing a lesser development of the trait, intervening between the "center" and a southerly peripheral group with the same intensity of development as the "center." The same is true even more strikingly of the statements in regard to the Grass Dance (p. 195) where the actual distribution is unzoned and quite unsystematic. The diagram

for the Sun Dance (fig. 31), although nearer to the facts, nevertheless gives an unfortunate impression of regularity. In each of these cases the true distributions are neither illustrated nor described, while misleading ones are used as evidence in the argument. I am quite aware that all these diagrams are explicitly said to be schematic, but there is a limit beyond which facts may not fairly be distorted.

Another form in which schematization or simplification gives an incorrect impression, is that exemplified in fig. 13, said to be based on the data presented by Hatt, with additions. In this case the map does not agree with the data, for Hatt gives type B as occurring among the Shoshoni, Ute and Dakota, type D among the Chinook etc. Further the map suggests and the text explicitly states (p. 23) that the various moccasin types are "mutually exclusive," whereas Hatt's data and those given by Wissler himself (*Anthrop. Papers A.M.N.H.* vol. V, p. 151) show that in numerous instances two or more types are in use by the same tribe.

It is an ungrateful task to call attention to these and other points which might be mentioned, but one must first examine the premises if one is to judge fairly the conclusions. What are the conclusions which Dr. Wissler has reached on data and by methods open here and there to valid criticism? The zoned distribution of traits which have diffused outward from a single point of origin has long been a commonplace; to this well recognized fact the author has given a rather unjustifiable appearance of regularity and symmetry. The conclusion that the center of diffusion is represented by the most specialized or developed form of the trait, and that it is mainly in this area that the successive specializations originated is also not new, but Dr. Wissler has again regularized the facts excessively, since in many cases (as for example in his own instance of the Sun Dance) it is clear that there are secondary centers which have contributed largely to the result. That this cultural nucleus is always centrally located within the area of the trait, is a conclusion really unjustified either by the mass of distributions known, or by the author's own data. Apart from other instances mentioned, one may refer to figs. 13 and 14 where the area occupied by moccasin type E (the most specialized form) is obviously peripheral. That the center of specialization often tends under favorable conditions to be roughly centralized geographically is true, but there are many factors such as topography, trade-routes, migrations etc. which may relegate

it to a marginal place. Even in so obviously favorable a region as the Plains, few if any distributions are really symmetrical.

That the peripheral, unspecialized forms of a trait are historically older and represent the undeveloped substratum, whereas the more specialized forms are historically the more recent, is a conception which has been employed for some time. Dr. Wissler, however, seems to me to give the idea too great an extension, by suggesting that valid conclusions as to trait specialization and implicitly therefor as to age, may be drawn from mere geographical position. According to this, the nearer a tribe is to the trait nucleus, the greater its specialization and the more recent must be its cultural acquisition. Where the actual distribution approaches the ideal single-center-concentric-zone type, this is undoubtedly true as a rule, but often and even in some of Dr. Wissler's own examples e. g. the Grass Dance, it is demonstrably and quite obviously not so. Again, when Dr. Wissler says (p. 189) that the "extent of diffusion is proportional to the time" he would seem to imply that the longer the time, the wider the limits of diffusion. But this is affected by so many other factors, that it can be maintained only as a very general tendency, and Dr. Wissler's own example of the historical spread of the Peyote, furnishes a good illustration of its failure in the concrete case, since the cult took as long to reach the almost contiguous tribes in Oklahoma as it did to get to Wyoming and Wisconsin.

The final conclusion reached is that since culture areas and ecological areas are often roughly coincident, and cultural nuclei often lie within the core of the ecological region, it follows that the cultures are conditioned by the ecological areas, since they are adjusted to them. This is merely another way of saying that culture is the result of and is determined by environment. Here again Dr. Wissler's fondness for universal statements, unqualified by any exceptions, gives an unwarranted impression. The whole form of presentation suggests that the totality of a culture is thus completely subservient to environment. Every anthropologist knows of numberless instances in which cultural traits are not only not adjusted to the environment or the result of it, but exist in spite of it. Every environment obviously exerts certain restrictive influences on its occupants, in that it supplies only certain kinds of raw materials. Through these it directly affects and limits the character of some aspects of material culture, and indirectly may influence a few, usually not very important factors in social and even religious life. Many

elements however of material culture and the majority of all social and religious factors are unrelated to environment, and owe their existence and much of their distribution either to historical, religious or economic causes, or to popular movements, trade-routes etc. To give to environment the omnipotence suggested by the author is to attempt the impossible. To quote from a discussion of the adequacy of environment to determine culture given by Dr. Kroeber in his "Anthropology" (p. 192):

"By using environment or heredity, one can often seem to explain certain selected features of a culture, but the appearance is illusory, because one need only be impartial to realize that one can never explain in this way the whole of any culture . . . the environmental and the biological-hereditary interpretation fail in proportion as they are pushed farther; in fact can be kept going only by ignoring larger and larger masses of fact to which they do not apply."

I have made but passing reference to the portion of Dr. Wissler's book in which he applies to man's physical traits the same methods and reasoning used for cultural factors, and in which he reaches parallel conclusions. The detailed criticism of this section I may well leave to abler and more competent hands than mine, but a few words must be said. In the main, the same general criticisms apply here as in the treatment of cultural facts. The author states well-known distributions sometimes only partially, sometimes inaccurately, and draws conclusions from comparisons between groups not always really comparable. His theory of the independent local origin and pyramiding of specialized characters fails, (as do all others which seek to explain local types as merely the result of local variation) in accounting for their peculiar and significant distribution—a distribution comparable with that of local types in the Old World, where they are mainly the result of known and demonstrable racial movements. Dr. Wissler's constant disregard of verifiable migration leads him to make such astounding statements as (p. 165):

"so far as we know the Indians in North America for thousands of years before 1492 suffered no radical displacements."

As every one with even a rudimentary knowledge of the subject knows, this is absolutely untrue, and Dr. Wissler can hardly escape the blame for what has every appearance of deliberate misstatement in order to prove his case. Dr. Wissler says that there is need of

"a safe technique for interpreting somatic distributions, towards which the assemblage of these few examples may be considered the first step."

The need is obvious, but the technique displayed is neither safe nor sane; it is often too inaccurate to be the one, and always too oblivious of other factors than that of plotted distributions to be the other.

I have been unsparing, perhaps even pedantic, in criticism of Dr. Wissler's book for two reasons. In the first place it is written obviously in the main for laymen,—for those who have neither the time nor the inclination to check the accuracy of the writer's facts, and who may readily be led astray by too generalized statements or too schematic a presentation of data. Under such circumstances it is a duty incumbent on the author to take exceptional pains to avoid errors; and when such care has not been exercised, it is equally the duty of the reviewer, albeit a most unpleasant one, to point them out. In the second place I do not like to see "a good horse ridden to death." The study of the geographical distribution of anthropological traits is one of the most valuable means of unraveling the intricate and often very obscure history of human origins and cultures. But it is not the only means, and taken by itself it may often lead one far astray. To quote again from Dr. Kroeber (*op. cit.* p. 335) "valuable as the distribution principle is . . . it can never be used mechanically. It must be applied with common sense and with open-mindedness toward all other techniques of attack."

It is just in this last factor that I feel Dr. Wissler has been lacking; he has let himself be carried away by his enthusiasm so completely, that he has spoiled a good case by overstatement.

When all's said and done, however, Dr. Wissler's book is a timely and forceful setting forth of a valuable method of approach to many of the problems of anthropology; its faults are mainly those of enthusiasm. It raises very sharply again the age-old controversy on the influence of environment, and carries the fight squarely into the territory of the physical anthropologists. It will undoubtedly arouse keen discussion; it should stimulate further careful and detailed investigation; and its very over-emphasis may be of lasting value in compelling attention to a technique which has already led to very significant results.

R. B. DIXON

Reallexikon der Vorgeschichte. Herausgegeben von MAX EBERT.
Berlin: Walter Gruyter & Co. Vols. III-VII.

A notice of the earlier volumes of this encyclopaedic work, which continues to appear in installments of approximately eight signatures

each has already appeared in the *AMERICAN ANTHROPOLOGIST* (1925, 561 f.). The expectations raised have been amply fulfilled. It would be difficult to find a more comprehensive and up-to-date work of reference on the various aspects of culture-history. A summary review of the most important categories of articles will give the readers of this Journal some conception of its scope.

The treatment of physical anthropology has devolved on Professor Otto Reche (Vienna). Attention may be called to his series of articles on the various races of *Homo* (5: 361-380), which in part introduce a novel terminology. Thus, Cro-Magnon man is introduced as *H. priscus*, and the Armenoid race as *H. tauricus*. The latter is considered a close relative of *H. dinaricus*. Reche is of opinion that the Dinaric and Tauric types do not represent primary stocks, but have resulted from a mixture of broad-skulled and narrow-faced races, brachycephaly and leptoprosopy being assumed dominant. The assurance with which the mental traits of living races are registered reveals little understanding of the difficulties involved in an objective psychological study of race differences.

Palaeolithic prehistory, as might be expected, receives competent and adequate treatment at the hands of Professor Hugo Obermaier (Madrid). His theoretical views were clearly and concisely set forth in the earlier volumes under such captions as "Capsien," "Acheuleen," etc. Among his more recent contributions, that on "Kunst" (7: 136-161) may be singled out for special notice. The author insists that true composition is lacking in Pleistocene animal representations (140). He accepts Breuil's proof of a tendency for geometrical designs to evolve from the progressive conventionalization of realistic forms, but cautiously adds: "*Dieser Werdegang ist natürlich keineswegs ausschliesslich zu fassen.*" In fact, he explicitly admits the origin of certain patterns in technical processes (141). As in previous writings, Professor Obermaier brings out the contrast between the static Franco-Cantabrian art, with its virtual neglect of the human species, and the dynamic East Spanish style, with its profusion of human forms (152).

The department of theoretical ethnology, primitive sociology, and primitive religion, is in Professor R. Thurnwald's (Berlin) charge. His summaries of concrete data, under such captions as "Familie," "Heirat," "Kaste," "Klan," "Jünglingsweihe," and innumerable others, are usually admirably concise summaries of knowledge. It is gratifying to note how largely he utilizes American

sources. Naturally there will be room for differences of opinion in matters of interpretation, but Thurnwald's position will generally be found to be sane and temperately expressed. In the interesting discussion of diffusionism ("Kulturkreis," 7: 118-122) it might have been well to point out that Von Luschan's well-known treatise on "Zusammenhänge und Konvergenz" (*Mitteil. der Anthropol. Gesellsch. in Wien*, 1918, 1-117) deliberately ignores the distinction between parallelism and convergence.

Eduard Hahn, in a series of articles, ("Hackbau," "Haustier," "Hund," etc.) expounds the views on economic history well-known from his previous publications. This highly suggestive but opinionated writer takes little cognizance of criticisms of his theories and sometimes commits strange inaccuracies, as when he asserts:

"Karl v. d. Steinens Bakairi hatten keine Hunde, und ebenso hat er auf Neu-Seeland gefehlt, sonst scheint er über die ganze Erde verbreitet" (5:403 f.).

Dogs were certainly known to the Maori, who occasionally ate them (Raymond Firth, "Economic Psychology of the Maori," *Journ. R. Anthropol. Inst.*, 1925, 340-362). On the other hand, the Tasmanians and Andamanese seem actually to have been without dogs. In the article "Kamel" (6: 196) Hahn adheres to his old idea that the dromedary is nothing but a domesticated form. He ignores Otto Antonius's contrary interpretation (*Grundzüge einer Stammesgeschichte der Haustiere*, 1922, 309 f.); yet the reported infertility of camel-dromedary hybrids at least merits some discussion. On the other hand, the statement on "Hackbau," (5: 12 f.) an integral part of Hahn's system, is surprisingly conservative: the author no longer suggests that tillage with the hoe is an exclusively feminine occupation but merely lays down the acceptable proposition that women invented horticulture and are still the main cultivators in many parts of the globe.

Domesticated species are also discussed by Peter Thomsen and Hilzheimer.

Among the ethnographic essays, that by K. B. Wiklund on the Finno-Ugrians (3: 364-382) stands out for its thorough-going discussion of both linguistic and somatological data. Professor Wiklund places the primeval home of the stock about the upper reaches of the Volga and Oka, as well as their affluents. He admits certain morphological and lexical coincidences between Finno-Ugrian and Indo-Germanic that argue for an ultimate genetic unity but does not

regard the question as definitely settled,—indeed, serious research along these lines has only recently begun.

Naturally much space is devoted to Egyptological, Assyriological, and classical topics; and anthropologists who wish to acquire a rapid survey of these fields can hardly do better than to consult the relevant essays of the *Reallexikon*. As was set forth by Professor Ebert in his prefatory announcement of the work, it is designed primarily for students interested in Europe and adjoining areas. This does not by any means imply the exclusion of other regions—for example, Thurnwald considers them all—but does involve a special emphasis on what is better known, hence less requiring exposition. It is a pity that uniformly intensive treatment has not been given to the prehistory of all continents, so far as known; the *Reallexikon* might so easily have become an encyclopaedia of the whole of culture-history. Even with this qualification, however, it approaches that goal more nearly than any other work known to the reviewer and must be reckoned one of the most remarkable products of recent scholarly collaboration.

ROBERT H. LOWIE

The Scientific Study of Human Society. FRANKLIN H. GIDDINGS, Chapel Hill, University of North Carolina Press, 1924.

Realizing that advancement in the study of man has not kept pace with accomplishment in the 'natural' sciences, inquiry among sociologists has become introspective. For those who have some insight into the exacting prerequisites for scientific work in other fields, the situation in the humanities is not encouraging. History, among other studies, presents an embarrassing choice to the would-be scientific historian. It is either a bare chronological statement of events or a form of narrative art, in which the plot turns upon motives imputed to men and groups by writers to whom they are unknown. Economics, to many economists, appears to be merely a twentieth century restatement of eighteenth century speculation concerning human nature when it engages in buying and selling. To some sociologists, sociology has never been more than a gesture of homage to Comte and Darwin and a reprint of miscellaneous readings on biology, anthropology, economics, politics, psychology, ethics and philosophy.

Disturbed evidently by such observations, Professor Giddings completes thirty-two years of sociological effort with a volume on

methodology. *The Scientific Study of Human Society* is smaller than many books which have preceded it from the same pen. But its claim to the attention of students is compelling. In it the distinguished author proposes not only "to indicate wherein and to what extent sociology is indubitably a scientific study of Human Society," but adds his unqualified conviction that the book is at present "the only work of its kind." Such words written by the Dean of American sociologists cannot be ignored. They challenge students not only to examine the bases of Professor Giddings' security but to test their own methodological foundations.

There is little to be gained by dwelling on the sociological foreground of the book. This is composed of the familiar concepts formulated by Professor Giddings when he was a young instructor at Bryn Mawr and Columbia, and since elaborated repeatedly. Nor will students of methodology in the social sciences be served by considering the immediate practical purpose of the book. This is the instruction of social workers and social "engineers" in a way of "factorizing" or breaking-up human behavior into pieces suitable for measuring, counting, weighing, plotting and correlation. As such, it is merely another manual of statistics. It is important, however, to note that Professor Giddings maintains that human beings in their behavior conform in the long run to certain normal or natural action patterns, which upon sufficient repetition become folkways or institutions. Institutions also in their turn, when regarded as changing historical entities, develop according to patterns or through a normal or natural series of cultural states.

We encounter first a succession of form-action patterns which constitute savagery; then a succession of form-action patterns which constitute barbarism; and at length a succession of form-action patterns which constitute what we are pleased to call civilization! (pp. 13-14).

The business of the sociologist who wishes to be a scientist is to find these patterns and to find them by means of quantitative procedures.

The final verification of an alleged fact . . . is only through much repeating of observations and measurements . . . Physicists and chemists, astronomers and geologists, biologists and psychologists are tirelessly repeating their observations and their measurements of presumptive fact. Social psychologists and sociologists must get the habit. (p. 58).

In other words, in these and many other statements, Professor Giddings identifies the aim and method of the science of man with

the aim and technique of certain natural sciences, namely the determination of the natural or normal by means of mathematical analysis.

Can students of societies and institutions accept this identification? Can the humanist, the sociologist, the historian, the anthropologist, the archaeologist, the psychologist, the economist, the philologist reach common ground on this point? Can they agree that what they desire to find is the normal? Are they willing to consider as the raw material of scientific inquiry in their respective fields only that which can be weighed, counted, measured and plotted? Will they as scientists be willing to ignore all that resists statistical procedures? Professor Burtt, the historian of the methodological foundations of physics, the most mathematical of the natural sciences, has expressed himself clearly on the matter:

When in the interest of clearing the field for exact mathematical analysis, men sweep out . . . all non-mathematical characteristics . . . they have performed a piece of cosmic surgery which deserves to be carefully examined.

Recent students of methodology in the social sciences have been equally clear in their dissent from Professor Giddings' assumptions.

It has been said that although the phenomena of interest to the curious mind are extraordinarily diverse, that form of human behavior known as scientific inquiry is unified by the fact that inquirers in all fields are engaged on one problem, the unraveling of the puzzle of the present. In slightly other words, each inquirer, whether in botany or psychology, chemistry or anthropology, starts with the phenomena he finds in the world about him, and asks of it one question, "How does it come to be as it is?"

In answering this question, however, the diversity of the material suggests, when it does not compel, a diversity in ways of handling it. The chemist and the worker in similar fields is in a sense fortunate. The character of his material permits him to withdraw to the isolation of his laboratory. There the original inquiry is somewhat recast. The fundamental problem still remains that of determining how the present comes to be as it is, but the chemist approaches it by asking a new question, "What are the chemical constituents of matter?" This he answers by the use of experimentation, mathematical analysis and other techniques, all conducted in abstraction from the environment. The conclusions he reaches are in no way influenced by events outside his laboratory window. The analyst does secure a series of results which enable him to say that normally, naturally,

or if nothing interferes, the constituents of water remain H_2O whether he conducts his experiments in a monarchy or a democracy, in the Arctic circle or in a Kaffir kraal.

But this type of inquiry is not all-inclusive. There are other phenomena in the present which cannot be abstracted for analysis from the external world. Their resistance to laboratory techniques, however, does not withdraw them from the probings of the curious mind. Neither does it prevent science from asking of them its fundamental question. The palaeontologist seeks to find out how the present distribution of fossil forms of life comes to be what it is, but he is compelled, before he finds an answer, to consider the appearance and recession of glaciation, the shifting of ocean shores and river beds, volcanic upheavals and like events. Similarly, when the anthropologist completes a description of a primitive group, and confronts the problem of explaining how the present culture of that group comes to be as it is, so different from co-existing cultures, he cannot ignore the influence of invading strangers, the extension of trade and a host of other historical events. These events would be alien and irrelevant to the laboratory technique of solving the problem of science, but are essential and indispensable to the understanding of present phenomena in the anthropologist's own field.

In other words, although scientists are unified by a common aim, they are forced by a different impingement of events in their respective fields to develop different techniques. The statistical technique is extremely useful where the impulsion of events is presumably absent or of relative unimportance. To the extent, however, that the present is a product of the past, concentration on the procedures of counting, measuring and weighing, to the practical exclusion of all other techniques, merely hinders thought.

Of course, it is easy to forgive Professor Giddings his faith. The mysticism of numbers has captured many minds and will continue to do so. Professor Giddings, moreover, is following distinguished masters. It was the legerdmain of no less a person than Auguste Comte which drew sociology from the same hat which had previously contained physics. It was Condorcet, Quetelet, Descartes and a long line of Western European philosophers who sought to discern behind the veil of events, the reality of the natural and computable. Considering the difficulty in which students of man now find themselves in accounting for present diversities in cultures, and considering the long and unproductive use in the social studies of the methodo-

logical assumptions of physics and related sciences, Professor Giddings is to be congratulated for raising the question of method even though he answers in the same old way.

MARGARET T. HODGEN

Archiv für Rassenbilder. Bildaufsätze zur Rassenkunde, herausgegeben von E. V. EICKSTEDT. München: J. T. Lehmann, 1926. (2 mk, for each series).

This set presents a very interesting method of disseminating a knowledge of racial types. The four envelopes before us contain each a series of ten card-board sheets with from one to three photographs accompanied by a descriptive text, the information being in part historico-geographical and ethnographic as well as somatological. In the first essay the editor, Egon von Eickstedt, treats the Tamil; the second, by Dr. J. Wastl, is devoted to the Bashkir; in the third Dr. Hella Pöch presents and characterizes a group of Ukrainian Volhynians, and in number 4 R. Heine-Geldern comments on M. H. Ferrars' pictures of Burmese types.

The illustrations are clear and the text concisely summarizes valuable information not otherwise readily accessible to the layman. From the prospectus we gather that altogether sixteen of these *Bildaufsätze* have been issued and that many others are to appear. Among the former, we call attention to K. Gorjanovic-Kramberger's "Der diluviale Mensch von Krapina" and H. Bryn's "Norweger." The series in preparation include Dr. B. Oettinger's treatment of the Northwest Coast Indians, R. Pöch's Bushman and Australian types, and F. Sarasin's New Caledonians.

The pedagogical value of this publication for class-room purposes is evidently of the highest, and it is worth noting that slides are sold by the publisher at 15 mk. for a set of ten.

ROBERT H. LOWIE

Ethnologischer Anzeiger, Jahresbibliographie und Bericht über die völkerkundliche Literatur; herausgegeben von Dr. M. HEYDRICH (Dresden) und Dr. G. BUSCHAN (Stettin). E. Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1926. Jahrgang I. Heft 1, 64 pp. (4 mk.)

This new periodical, planned to appear as a quarterly from 1927 on, seems to be a revival of the *Zentralblatt für Anthropologie*. The

initial issue establishes the pattern to be followed in the future. There is, first of all, a Bibliography, which purports to be as complete as possible, including material of ethnographic interest that may be scattered over journals of a more technical character. The arrangement is by continents, each being considered only once a year, and the several distinctive culture areas are treated under separate headings. The second section contains Reviews of the more important publications; special emphasis will be placed on valuable treatises written in generally inaccessible languages. From time to time there are to appear comprehensive summaries of special regions; for example, the present installment contains a résumé of Siberian work by M. Azadowskij. Finally there are brief Communications (*Mitteilungen*) about new investigations, congresses, museums, university activities, and personalia generally.

This worthy enterprise certainly merits general support, and we hope that it will prosper and grow in proportion to the competence of its management as indicated by this first *Hefte*, which in its opening section is entirely devoted to Americanist interests.

ROBERT H. LOWIE

PREHISTORY

Our Early Ancestors. An Introductory Study of the Mesolithic, Neolithic, and Copper Age Cultures in Europe and Adjacent Regions.

M. C. BURKITT. 243 pp., 30 pls. Cambridge University Press, 1926.

The author gives two reasons for writing this book. In the first place very few textbooks covering this particular field have been published; secondly the need of such a work was felt by the author himself as lecturer to University students as well as by the students themselves. He admits that this long and painstaking job is still far from completion even as far as Europe is concerned, and that it will be many years before the work is in any sense finished. Our knowledge of the Old Stone Age, especially that portion of it known as the Palaeolithic, is now fairly well crystallized and forms a safe basis on which to build a superstructure which will form a link between prehistory and proto-history. The volume begins with that period which was once known as the hiatus,—a period bridging the gap between the Magdalenian epoch with its reindeer fauna and realistic cave art and the culture known as Neolithic. This supposed

hiatus has vanished before our advancing and cumulative knowledge and in its place we now have the Mesolithic period.

Measured by Palaeolithic standards, the Mesolithic Period covers a relatively short space of time. Regionally it is represented by cultures differing slightly in fact as well as in name. The Azilian of Piette with its painted pebbles and flat harpoons of staghorn; the Tardenoisian of De Mortillet with its microliths; the Asturian of Count de la Vega del Sella; and the Maglemosean of Sarauw all go to make up the Mesolithic complex. And in recent years there is a tendency to detach the first or lowest rung of the Neolithic ladder and add it to the Mesolithic; I refer to the Epoch of the Shell Heaps in Denmark and its equivalent, the Campignian, in France.

"Neolithic Civilization" comes in for the lion's share of space. The most notable additions to human experience during the Neolithic Period are: (1) the domestication of animals and plants; (2) the manufacture of pottery, and (3) the pecking, grinding and polishing of stone tools, instead of merely chipping as a shaping process. A chapter is devoted to Neolithic typology, made all the more valuable by a well-selected series of plates.

Chapter VII is given over to "A Brief Sketch of England in Mesolithic, Neolithic, and Earliest Metal Age Times;" while the last three chapters out of a total of ten treat of "The Mediterranean Area and the Copper Age," "Preliminary Notes on the Bronze Age Cultures" (not envisaged in the title of the book), and "Art."

The author is taken to task by no less an authority than Sir Arthur Keith for making no attempt to fix in years the duration of the cultural epochs covered by the volume. The serious student of prehistory will not be disturbed by the omission; the general reader, however, is glad to have such details even though they have to be in the nature of the case only approximations or enlightened guesses. A fairly long and carefully selected list of references is added at the end of each chapter, enabling the student to delve deeper into the mines of information now at his disposal. The present volume is not the first from Burkitt's pen and we hope it is not to be the last.

GEORGE GRANT MACCUDRY

Préhistoire de la Norvège. HAAKON SHETELIG. Oslo: H. Aschehoug & Co., 1926, 280 pp. 10 pls.

Theoretically, man might have lived in Scandinavia during an interglacial stage. One can simply say that no record was left of his

passage. Up to the present time no trace of a palaeolithic population has been found. The oldest relics date from post-glacial times and belong to the stage of culture known as the Maglemosean; they belong approximately to that which is called the Mesolithic Period in western Europe.

The author stresses the fact that while the whole of Scandinavia may be looked upon as a unit, Norway never has had the abundance of flint which, in Denmark and Sweden, has been the basis of a richer cultural evolution. Norway had only flints that were left in gravels by the Glacial Period. Thus while the oldest element of lithic industry in Norway was flint, use was made of hard fine-grained eruptive rock during the second cultural stage,—the so-called Nöstvet Epoch.

The Epoch of Nöstvet in Norway corresponds in age to that of the shell-heaps in Denmark and the Campignian in France. Porphyry, quartzite, syenite, and diabase do not chip in a way to produce utilizable edges comparable with those of chipped flints. It is no doubt because of this difference that the pecking and polishing processes were employed on tools made of these eruptive rocks even as early as the Nöstvet Epoch and before the polishing process was applied to tools of flint.

Nöstvet dwelling sites are situated along water courses and are today at a certain height above sea level; this latter fact makes it possible to fix the geologic age of the Nöstvet culture, to affirm that it was contemporaneous with the epoch of the shell-heaps in Denmark.

The Nöstvet culture probably resulted from indigenous evolution although it may have had an origin in common with the shell-heap culture. Use was made first of raw material found in and on glacial deposits; but before the close of the Nöstvet epoch the quarrying of the raw material from the abundant supply of eruptive rock in situ was carried on to a considerable extent.

In the second chapter, Shetelig discusses what he calls the Arctic Stone Age. As an example he cites the cavern of Viste near Stavanger. The occupants of the cavern were hunters pure and simple, the only domestic animal being the dog. Among the implements found were polished axes of diabase cylindrical in section,—a type similar to the one from Sigervoll and belonging to the Nöstvet epoch. By the side of this polished ax of diabase were found: an ax of staghorn, harpoons, barbless fishhooks of the Maglemose type, and small arrowheads

of flint with transverse edges,—all reminiscent of the Mesolithic.

As another example, Ruskeneset, a camp near Bergen belonging to the very close of the stone age, was cited. This station is contemporaneous with the stone cists of Scandinavia, hence is much younger than the station of Viste. Under the rock shelter of Ruskeneset lived in spring and early summer hunters of the stag and seal. Moreover, hunting and fishing were not the only industries, for bones of domestic animals occur, also imprints of barley on clay vessels, daggers of flint, and small fragments of bronze.

Finally an important phenomenon of the Arctic Stone Age is the realistic art represented by paintings and engravings on rocks in Norway and Sweden. It is an art the origin of which may be traced to palaeolithic traditions. The author lists sixteen engravings and four paintings from Norway, three engravings from Sweden, and one painting from Finland. All the figures are of animals, especially Cervidae. And here, as in France at an earlier period, art was the handmaid of magic.

The influence of the epoch of megalithic monuments did not leave a marked impression on the stone-age culture of Norway. A few stone cists representing the closing phase of the epoch have been found near Oslo. However, during this epoch, there seems to have been a rather intimate commercial contact between Norway on the one hand and Denmark and southwestern Sweden on the other. The largest and best chipped flint implements found in Norway were importations from Scania, Jutland, and the Danish islands.

The author adopts the classification by Montelius of the northern Bronze Age into six phases and states that all six are represented in Norway. The first phase began about 1800 B. C. and the sixth ended some 700 B. C. It is a mistake to suppose that stone tools were no longer used during the Bronze Age; there is abundant proof that they were used, especially flint, down to the very end of the Bronze Age.

As to the first use of iron in the north, a few finds reveal the coexistence of small objects of iron with bronzes characteristic of the fourth and fifth phases of the Bronze Age. Finally, with the beginning of the sixth phase of the Bronze Age, that which really forms the passage to the Iron Age properly so-called, bronze is always represented by objects of apparel and ornament, rarely by arms and tools of any size.

The pre-Roman Iron Age in Scandinavia is characterized by the mediocrity of its civilization—also by the rarity of the objects found.

During the epochs of Hallstatt and La Tène, the north was poor in gold compared with the riches of the Celtic countries. Shetelig notes that the Bronze Age limit of expansion toward the north exceeded that of the Iron Age. This fact coincides with the theory of Sernander that immediately after the passage from the Bronze Age to the Iron Age, there was a rapid change from a mild climate to one much colder.

The author emphasizes the marked difference between the pre-Roman and Roman divisions of the Iron Age. For the first four centuries A. D., of the Iron Age in the north, he chooses the name "Roman Period." During this period commerce via the North Sea played an important rôle.

Considerable space is given to the fifth and sixth centuries A. D., the Merovingian Epoch and the Grand Invasions. Then follows a chapter on the epoch of the Vikings, noted for its fine examples of sculpture in wood. Some fifteen pages are given to ship burials and naval construction. These have a certain relation to, but are not identical with, the chariot burials further south in vogue during the epochs of Hallstatt and La Tène. The closing chapter deals with the decorative art of the Iron Age in Norway.

Ten pages of bibliography and ten plates complete a work that is to be commended highly. To the average reader a few more illustrations would have helped to elucidate the text; moreover, there is nothing in the captions of the ten illustrations that would give a clew as to the localities from which the originals came.

GEORGE GRANT MACCURDY

Bronzezeit am Jenissei. GERO VON MERHART. 189 pp. (Anton Schroll & Co., Wien, 1926).

The archaeological world was already under obligation to Dr. von Merhart for his prehistoric researches in Siberia¹ before the present volume appeared. It is a source of satisfaction to his colleagues to know that his study of the Bronze Age bears evidence of the same thoroughness which characterized his previous work.

Comparing eastern Russia with the Minussinsk region, the author believes that the Bronze Age cultures in the two regions bear about the same relation to each other that the Hungarian and Ural do: the cultures of eastern Russia and Minussinsk are derived in part from the same sources, show, in part evidences of direct contact, and in part were subject to entirely different influences. The Bronze Age

¹ The Palaeolithic Period in Siberia, *Amer. Anthropologist*, N. S., 25:21-55, 1923

in eastern Russia may be divided into three epochs: I, ca. 2500–1500 B. C. Mixture of stone, copper, and bronze objects. Related to the Fatjanowo culture of central Russia. II, ca. 1500–1000 B. C. Southern influence (Hungary, Kief) strong. The finds from Sëima are typical. III, ca. 1000–400 B. C. Iron plentiful toward the end of this epoch. Ananino culture. Scythian influence noticeable.

The Minussinsk culture may also be divided into three epochs, although the oldest epoch in eastern Russia is not represented: I, prior to 1000 B. C. Non-local types, Sëima for example. Geometric ornament only. II, ca. 1000–500 B. C. Geometric ornament. Realistic animal figures ornamenting tools. III, after 500 B. C. Most of the Minussinsk bronzes belong to this epoch. Strong Scythian influence. Zoomorphic ornamentation with plant motives toward the close. Not unlike La Tène culture.

The Fatjanowo culture is essentially central Russian but shows marks of contact with the very earliest phase of the metal age in eastern Russia. Its age, comparable with Bernburg and string ornament types of pottery, with Troy II–V, is estimated to be about 2000 B. C.

The oldest “kurgans” in the Jenissei valley belong to the well developed Age of Bronze. Each kurgan contains from one (seldom) to several graves; often a single grave will be found to contain remains of several individuals. The grave contents are for the most part bronzes: knives, daggers, picks, axes, celts, arrowheads, mirrors, needles, beads, buckles, earrings, rings for the ankles, etc. In addition to the bronzes, one finds bone objects, glass beads, gold objects, and pottery. Silver is unknown.

The collective kurgans belong to the close, or near the close, of the Bronze Age and show a distinct influence from outside,—presumably from the south or southwest.

The lugless socketed bronze axes of the Jenissei Government belonging to the “Krasnojarsk type” have been known for some time. The essential character of this type is the geometric ornament in relief—a feature which distinguishes it from the bronze axes of the Minussinsk district. A whole chapter is devoted to the objects found accompanying the Krasnojarsk type of ax and another to the animal figurations of the Bronze-Iron culture complex. The twelve excellent plates and sixty-five figures in the text add much toward helping the reader to visualize the meaning which the author has to convey.

GEORGE GRANT MACCURDY

The Upper Palaeolithic Age in Britain. D. A. E. GARROD. Oxford University Press, 1926. 211 pp., 49 ills., 1 map. (\$3.50).

Miss Garrod's compilation of the available data for the Upper Palaeolithic age in Britain will be welcomed by students of European prehistory. Although Upper Palaeolithic industries of the continent have received a large amount of attention, the finds in Britain, scattered as they are among many different collections and only mentioned in old and frequently inaccessible scientific journals, have never before been brought together in a single volume. Miss Garrod has collected all the available data on the Upper Palaeolithic in Britain and includes not only what has been published before but also much new material.

This work, however, is more than a mere catalogue of Upper Palaeolithic industries. Miss Garrod has succeeded in correlating the data and shows Britain as an outpost of continental culture where although the successions of the latter culture are present, they are by no means completely represented nor altogether typical in every instance. The Middle Aurignacian culture is the most abundantly represented and most typical, but the Upper Aurignacian shows some local developments. Solutrean influences in Britain were comparatively slight and are in the main limited to a few proto-Solutrean points. Throughout the Magdalenian period, Britain remained marginal to the Continent, Aurignacian culture still lingering with only traces of Magdalenian culture in the south. There are, however, local developments in flint working during this period so that the author terms this local industry "Creswellian," after Creswell Craggs, the most typical station.

It is unfortunate that very little of the archaeological work done in Britain in the past has been systematic. This has resulted in great confusion of industries and an almost total lack of stratification at any of the many Upper Palaeolithic stations. For this reason, Miss Garrod has resorted, for the most part, to a typological classification of artifacts. While this procedure is especially dangerous in assigning individual specimens to any particular horizon, it is nevertheless useful in comparing the whole industry of Britain with that of the Continent, and Miss Garrod has been cautious in her conclusions.

J. H. STEWARD

AMERICA

Pomo Folkways. EDWIN M. LOEB. (Univ. Calif. Publs. Amer. Arch. Ethn., Vol. 19, No. 2, pp. 149-405, pls. 1-3, 1926.)

The rather reminiscent title of this monograph on the Pomo Indians of north central California only in part suggests its contents. Indeed, it runs the gamut of life from construction of houses to ideals of physical beauty, and embodies the most complete ethnological report on the group yet published. Just why the author, who devotes only three short paragraphs to what he seems definitely to consider "Folkways," should give the entire work that title is not obvious.

Important facts in regard to the religious cults of the Pomo and their neighbors are revealed by the present study. Among the Pomo these fell into three categories, the "old" ghost ceremonies, the *kuksu* ceremonies, and the late ghost dance religion, which reached the Pomo in 1872 and largely supplanted the two earlier cults. This first dance series is believed to be the oldest, four of its elements appearing to the author as "original;" these are the use of the bull-roarer, the impersonation of ghosts, the "Death and Resurrection" initiation, and the mutilation by cutting. The "old" ghost ceremonies were common to both Coast and Inland Pomo. The *kuksu* ceremonies for healing and initiation were also common to both, but to these the Inland Pomo had added separate cult ceremonies not so motivated. Still further to the east among the Patwin and Northern Maidu these further elaborated *kuksu* ceremonies seem to have developed into those of the Hesi cult, and in this area the original form of the "old" ghost dance was not present. The clear recognition of the older ghost ceremonies is a long step forward in tracing out the development of these quite elaborate northern California ceremonial complexes.

The Pomo social organization as depicted by Dr. Loeb is equally interesting, for a nascent sib organization and even traces of what might have become a moiety division seem to be present. Surrounded by patrilineal peoples, the Pomo were in nearly all questions of descent matrilinear. Certain names were owned by individual families, or as Mr. E. W. Gilford has termed them lineages. According to Dr. Loeb, such names were transmitted mainly in the female line, and as they implied a certain female lineage they almost amounted to matrilineal sibs. In the same manner certain offices and membership in the secret society were also inherited in the maternal line.

In a recent statistical study of Clear Lake Pomo village censuses, Mr. E. W. Gifford came to a less positive conclusion in regard to the prevalence of matrilineal descent. According to his analysis descent of chieftainship was matrilineal, but the majority of personal names were passed on in the male line. According to Dr. Loeb this conclusion is due to the fact that a census usually covers only two generations, while the inheritance of names and of secret society membership often skipped a generation. Moreover, it is claimed that many of the names in the census were nicknames and not the more esoteric personal names. The latter author backs his claims by an appeal to genealogies which do show a greater proportion of cases of matrilineal than patrilineal descent, but the cases are too few to be entirely convincing. Considering the intrinsic interest of these potential mother-sibs or female lineages appearing in a patrilineal area, it is unfortunate that the genealogies which Dr. Loeb presents are not more complete and enlightening. As the author points out, the Pomo situation forcibly illustrates the fact that once a tendency toward unilateral reckoning is established it may express itself in the formation of either maternal or paternal sibs. But the factors that lead to this variation of regional pattern among the Pomo do not seem as yet to be clearly understood.

Another interesting point which the present work brings out is the tendency among the Pomo to transmit various professions in certain families. This recalls the functional families of the Patwin described by Mr. W. C. McKern, and while the formulation of the latter appears too schematic, there is in these new Pomo data a certain amount of similarity. Dr. Loeb's study of Pomo ceremonies reveals several similarities to the southwest, especially the sacrifice of meal, ceremonial pole-climbing, and the rattlesnake ceremony. However, the author's claim that the inclination of the Pomo toward matrilineal reckoning marks them as marginal to the former area does not seem probable to the reviewer. The natives of southern California in their moiety organization, gentile fetishes, ceremonial importance of the dance-house, retreat of the gentile leaders or priests before ceremonies, use of the ground-painting, ceremonial pole-climbing, ceremonial offerings of meal, plumed prayer sticks, water from sacred springs, and tobacco, and by many other parallels in social and material culture, do seem marginal to the Southwest. These groups however, are all patrilineal in descent, as are also many typical "Southwestern" peoples. It therefore seems more in accord with the

facts to presume that the southwestern traits exhibited by the Pomo reached them through the medium of the southern and central California groups, and that their matrilineal tendencies might best be explained by their own internal organization.

In addition to the presentation and analysis of the religious and social organization, *Pomo Folkways* presents a mass of detailed information on the domestic and utilitarian pursuits of the people. Throughout, distinctions between the Eastern, Northern and Central Coast Pomo divisions are indicated and should be of great value for detailed comparative work in the area. A few more tables similar to the one indicating the distribution of ceremonies would possibly have made these differences more obvious. Such criticisms are of very minor importance however, for the work as a whole is one of the most thorough ethnologic studies of a Californian tribe extant. The author has organized a very large amount of valuable material and in the field of religion especially, his conclusions clarify a hitherto tangled situation.

WM. DUNCAN STRONG

University of Washington Publications in Anthropology, Volume 1, numbers 2-4, August, 1925. University of Washington Press, Seattle.

Three papers published simultaneously, two by Leslie Spier and one by Erna Gunther, inaugurate a new series in anthropology, in spite of their bearing the numbers 2, 3, and 4. Number 1, published in 1920 as the first paper of a series in Political and Social Science, now discontinued, has been taken over as the initial paper of the first volume in Anthropology.

The two papers by Leslie Spier are "The Distribution of Kinship Systems in North America," which comprises pages 69-88 and maps 1-9, and "An Analysis of Plains Indian Parfleche Decoration," pages 89-112. The first comprises a careful study of the distribution of types of kinship systems. Eight types are distinguished. These are named for typical peoples: Omaha, Crow, Salish, Acoma, Yuman, Mackenzie Basin, Iroquois, and Eskimo. The author refrains from discussing historical connections. Such a discussion would have been particularly welcome from one who has so thoroughly digested his material. However, he has accomplished the onerous task of studying and classifying the large body of scattered kinship data. Students should be indeed grateful for this important work.

"An Analysis of Plains Indian Parfleche Decoration" embodies the results of the examination of 244 parfleches in various North American museums. Design elements are isolated and their distribution discussed. Historical relations are concisely expressed in numerical tabular form.

Erna Gunther's paper is "Klallam Folk Tales." It constitutes number 4 and comprises pages 113-170. The tales are in English and are presented in abstract at the end of the paper. "Comparative notes are attached to the abstracts These notes show a rather interesting affiliation with the tales of tribes to the north, particularly to those of Vancouver Island."

The new anthropological series, of which the above papers constitute the opening numbers, is octavo in size and printed in ten-point type. The typography is clean and pleasing and is exceptionally free from errors.

E. W. GIFFORD

The Classification and Distribution of the Pit River Indian Tribes of California. C. HART MERRIAM. (Smithsonian Miscellaneous Collections, vol. 78, no. 3. Washington, 1926. Pp. 1-52, 27 pl.)

This, the first of Dr. Merriam's long awaited contributions to Californian ethnology, many aspects of which he has studied more intensively than any else, discusses the ethnic relations and geography of a group of related peoples inhabiting a natural unit area in the northeastern corner of California. They constitute nine divisions of the Achomawi and two of the Atsugewi, in current terminology; in Dr. Merriam's, as many tribes of the Achoomah'-an and Atsookā'-an families of the Achomawan stock. This is the first time that either any complete or any reliable information has been made available as to the divisions of this stock. Under each tribe are given: the limits of its territory; a description of the area; its principal villages; adjacent tribes; names given, first, to related tribes and bands, second, to unrelated; names of the tribe in alien dialects; place names, with comments. This main body of data is prefaced by discussions of the general distribution of the stock, its internal classification, its environment (with a useful faunal list), a comparative vocabulary of the two principal speech forms, and a list of esoteric words; and there follow an alphabetic synonymy and notes on Shoshonean borrowing and "Coyote language." The plates show characteristic scenery and physical types. An excellent colored map is folded in.

This monograph is of the kind whose usefulness is permanent. The future is likely to value it even more than the present. It gives the basis for a culture, without which that culture must remain an unsubstantial thing to outsiders interested in it. There has been too little of this sort of work, especially on the Pacific coast, where native life is intensely localized and almost clutchingly rooted in the soil. That Dr. Merriam's inquiries are painstaking and his data as accurate as such data can be today, goes without saying; their fullness alone would carry conviction of his conscientiousness. Dr. Merriam continues to use English orthography for native names, and openly holds a brief in its favor. Most ethnologists and geographers are on the opposite side; but it is not a matter on which to lose feeling, as long as linguistic investigation is not involved. Either spelling is readily convertible into the other, for purposes of identification, which is what essentially counts. With Dr. Merriam's desire to avoid technical orthographies in matters of geographical and historical interest, the reviewer is wholly in sympathy; though he does not hold English spelling to be the only untechnical one available.

It is to be hoped that this paper will soon be followed by the promised cultural data on the Pit River Indians, and by the ethnogeographic and cultural information which Dr. Merriam has so long gathered on nearly all the other Indian groups of California.

A. L. KROEBER

L'art et La Philosophie des Indiens de L'Amérique du Nord. HARTLEY BURR ALEXANDER. Série de conférences faites à la Sorbonne. 114 pp.; 26 pls., of which 5 are coloured. Paris: Ernest Leroux, 1926.

This is a title well calculated to make some people raise their eyebrows, especially the second part of the title, for everyone concedes a strong sense of art and design to the Indian, but * * * a *philosophy*? To be sure, those who have lived with Indians more or less intimately have always been aware that they, as well as other peoples, have a *weltanschauung*. Those of us who have lived more or less intimately with the Indians have first of all been struck by that in their life which is exotic; then in some insidious manner we have become aware of a certain and sure charm, a charm which does not at all belong with our philosophy, a charm it is difficult for us to set forth in concrete terms, let us say, a vague and yet penetrating acquiescence in life, a quiet and a dignity, in spite of all the adventitious material squalor of the

Indian camp, an all-around thoroughness of view-point towards the world and towards life, without hesitancy, without neurosis . . . , and we have come back. We have come back again and again, some of us, most of us, either to study their culture according to our own scientific methods, or to soak ourselves in the outward forms of their art, we the artists and ethnologists. And some people, some trappers and pioneers got finally buried under, forgot they were white and became Indians: they were, in a way, the better ethnologists and artists.

But we artists and ethnologists, certain beyond the shadow of a doubt, as is the way of all peoples on earth, that our philosophy and our epistemology are the real and true ones, set forth the results of our investigations in learned print. And other people, who never saw an Indian in the flesh, but who came to certain conclusions about the psychology of primitives and its genesis, i.e., its progress towards the point somewhere in infinity where we the Indo-Germans stand at the present moment, these learned psychologists and sociologists proceeded to elaborate their theories. These have been called by many names. One of the best was "*participation mystique*." It explained a great deal and will remain as one of the milestones. But no one had ever had the courage to consider the *weltanschauung* of the American Indian primitives *per se* as a complete and rounded thing, and not merely as a step on the way to our achievement.

For having done that, the work under review merits a place quite apart in all anthropological literature, even more in psychological and philosophical literature. That is the central idea, or rather the central inspiration of Professor Alexander's work, if I have read it rightly. His central thesis, which he develops through a consideration of several aspects of Indian life, and which will evoke criticism only from those few who have at their command a detailed knowledge of the manifold cultures from the Atlantic to the Pacific, the central thesis is one which will be noted especially by psychologists (or should I say estheticians?), namely: that the keynote of Indian psychology is "esthetic thinking."

Esthetic thinking vs. intellectual thinking, here is enough to stop some people, and make them wonder. It opens wide the door to all the philosophical controversies about concepts and ideas, or, as the French call them, *representations*. For, to think esthetically means to think with one's senses. But, the product of one's senses is what? a sensation? or a representation? And if one represents it, then one

has what? What sort of an image? a collective image? an individual image? Ask the Indian!

In other terms, we are faced by something different from our own system of psychology (or would we rather say our system of esthetics, or of epistemology?) Then, we are forced to admit it, we are faced by another system of knowledge, a system where one knows by sensing, not by thinking, not by cataloguing. Perhaps in expressing myself so strongly I go too far, I mean further than Prof. Alexander. But this theory of an "esthetic thinking" is a pregnant idea. It entails necessarily, and the author makes plentiful allusions to it, a comparison, even an opposition between our conception of a deterministically fixed world, and the Indian's conception of a universe of living things, including the rocks and the rivers and the trees, that melt and merge, and become amalgamated into one, and break apart again into discrete units, while the individual person is sucked into the vortex, feeling for all and feeling for himself at the same time. This is decidedly not our conception of the world.

There is a preface by van Gennep. One wonders why the editors allowed it to remain. It is a masterpiece of patronizing superciliousness.

Although this has nothing to do with the anthropological merits of the book, one is obliged to comment on the French style. It is in the very best tradition. One is reminded of Renan and his force of poetical imagery, couched in soberest prose. I cannot forego the pleasure of quoting a few paragraphs:

Enfin, en tout ceci on trouve l'explication du mélange inextricable du réel et du mystique qui existe au fond de l'esprit de ces naturels. La vie actuelle et la vie du rêve, le fait et le symbole, tous sont dans leur pensée d'une même pièce; leur monde ne se constitue pas, comme est constitué le nôtre, d'un dédoublement en matière et en esprit, mais les deux éléments forment pour eux un seul être; et par conséquent toutes sortes de choses ont une réalité auxquelles on ne trouve nulle part aucune analogie. . . .

La pensée des naturels de l'Amérique dénote une qualité esthétique de l'intelligence qui est à sa façon comparable à notre pensée logique. Cette qualité n'est pas celle de l'analyse; et cette pensée n'est pas articulée, au moins non dans des modes verbaux; par conséquent, leur expression ne s'assujettit pas aux transpositions et aux permutations régulières qui sont les marques de nos raisonnements scientifiques. . . .

La thèse, ou programme d'étude, de la pensée et de l'art de l'Indien américain que j'ai essayé d'exposer, est que cette pensée et cet art sont les manifestations d'un esprit essentiellement esthétique et, par conséquent, synthétique dans ses modes d'expression. Pour le Peau-Rouge, il y a une

alliance intime du réel et de l'idéal, telle que l'image ne se distingue pas de la réalité et que le rêve se mêle à la vie actuelle. La nature et l'humanité constituent pour lui une chose unie; il n'y discerne pas une dualité, et l'objet en lequel elles se forment devrait se représenter plus comme image et drame que comme mécanisme. Le monde entier a pour lui quelque chose d'un fantôme, bien qu'il nous fasse noter qu'il ne reconnaît aucune autre réalité que celle de ce fantôme. . . .

But a reviewer may not quote forever. Let me only call attention to the first five pages of Chapter VI, and the last six pages of the same chapter.

JAIME DE ANGULO

The Technique of South American Ceramics. S. LINNÉ. Göteborg 1925. 199 pp., 44 figs., 9 maps.

This work was stimulated by Erland Nordenskiöld, follows the methods of his *Comparative Ethnographical Studies*, and attains to results worthy of that illustrious precedent. It is therefore hardly necessary to specify that the author's investigations are critical and exhaustively thorough, that the literature has been gone over with completeness, and that conclusions are never either forced or avoided. The topics considered are: distribution of pottery making in South America; pottery-replacing vessels; sex labor; composition and working up of clays; tempering (including microscopic sections and 8 pages on the use of fresh-water sponges); porosity; the building up processes; smoothing and handle addition; firing; painting, coating, and varnishing; mending; manufacturing centers and trade spheres; synopsis and conclusions. The maps show distributions as follows: 1, non-pottery-making tribes; 2, basket-moulded pottery and water-proofed baskets; 3a, b, tempering materials; 4, primitive sphericalness; 5, firing methods; 6, slip; 7, varnishing; 8, variations of an Inca type; 9, centers and trade relations; all of these but no. 8 are continental maps. This is a valuable work. We need something similar for North America.

A. L. KROEBER

SOME NEW PUBLICATIONS

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ANTHROPOLOGICAL NOTES

SECOND ANNUAL MEETING OF CATHOLIC ANTHROPOLOGICAL CONFERENCE

(Held at the Catholic University of America, Washington, D. C.,
April 19, 1927)

The following delegates and members were present: Rev. Dr. C. J. Connolly; Dr. J. DeS. Coutinho; Dr. Anna Dengel, Cath. Med. Missionaries; Bro. Dominic Augustine, F.S.C.; Bro. Francis, F.S.C.; Rt. Rev. Msgr. Wm. Hughes, Bureau Cath. Indian Missions; Very Rev. E. J. McCarthy, Chinese Miss. Soc. of St. Columban, Rev. R. J. McWilliams, S.J.; Very Rev. Dr. M. A. Mathis, C.S.C.; Mr. R. B. Riordan; Mr. W. F. Sands; Rev. Edgar Schmiedeler, O.S.B.; Rev. F. B. Steck, O.F.M.; Very Rev. Dr. J. B. Tenny, S.S., Negro and Indian Miss. Board; Rev. Dr. F. A. Thill, Cath. Stud. Miss. Crusade, Rev. J. C. Thomann, A.F.M.; Very Rev. J. J. Thorl, S.M.; Rev. Sidney Turner, C.P.; Rev. Claude Vogel, O.M. Cap.; Rev. Dom Augustine Walsh, O.S.B.; Very Rev. Dr. N. A. Weber, S.M.; Rev. J. M. Cooper.

After a short opening address of welcome by the President, Rt. Rev. Thomas J. Shahan, D.D., an informal report of the progress and prospects of the Conference was given by the Secretary.

As a result of an extensive discussion, participated in by nearly all the delegates and members present, it was decided to start the publication of a small four-page or eight-page quarterly bulletin. For the present at least, the purpose of the bulletin will not be to serve as a medium of publication for original scientific material coming in from missionaries. Its purpose as outlined will be to promote interest in and advancement of anthropological studies in general and of the work of the Conference in particular among (a) Catholic missionaries, (b) Catholic mission candidates, seminarians, and college students, and (c) the Catholic public at large.

The bulletin will publish short articles or contributions on such subjects as: value and importance of anthropological studies to missionaries, and others; news notes; outlines of our present knowledge of outstanding questions and problems in the field of anthropology, with short bibliographical references, questionnaires to serve for missionaries in the field and for such groups as the Crusade study

clubs; suggestions for missionaries as to material needed and as to methods of gathering same.

The bulletin will be non-technical, but will, it is planned, be kept at a high level of popularization. It will not take the place of the yearbook, but will be quite independent of and additional thereto, and will serve quite another purpose.

The question was raised as to the advisability of making next year's meeting one of wider appeal through the inclusion of a short program of papers or talks on anthropological topics of more general interest. No vote was taken on the question, its decision being left to the Executive Board.

It was unanimously agreed to continue for the coming year the same officers who had served for the past year.

JOHN M. COOPER, *Secretary*

A LETTER FROM DR. RÓHEIM

Budapest, 14.—2.—1927.

To the Editor of the AMERICAN ANTHROPOLOGIST

Sir,

An American edition of my book on *Australian Totemism* (George Allen and Unwin, London) is announced. It may interest the American reader to know that the curious process of calling a book on *Australian Totemism* "Social Anthropology" merely represents the publisher's (Liveright in New York) views on the matter and not the author's. I was never asked about it and would certainly not have consented to this ridiculous and misleading change of title if I had been.

Yours faithfully,

G. RÓHEIM.

PREHISTORIC MAN IN EAST AFRICA

A complete human skeleton has recently been found at Nakuru, Uganda, East Africa, by L. S. Leakey, a member of the Cutler Expedition. Near the skeleton, which was uncovered at a depth of twelve feet, were over a hundred stone implements described as "Mesolithic" in type. The skull has a nose of medium width and lacks the prognathism characteristic of the negroes. Apparently the find is of considerable antiquity.

Other finds in the Uganda have brought to light implements which are comparable to those of the early stages of the European Palaeo-

lithic. Other implements which have been found in Uganda by Mr. Wayland, the government geologist, are small geometric forms very similar to the Azilian microliths.

THE INDIAN POPULATION of the United States has been increasing during the past ten years according to Albert B. Reagan, expert on Indian affairs. During this period the number of aborigines has grown to 349,595, an increase of 16,585 or approximately 4.8 per cent. The tribes which have most notably increased are the Navajo, the Cherokee and several groups in Oklahoma. This increase he attributes to government medical attention and improvement of living conditions.

DR. SVEN HEDIN, the Swedish explorer, is preparing to set out from Peking on a long expedition to the interior deserts of China. The American and English anthropologists at the Peking Union Medical College arranged to coöperate with the expedition in studying the evidences of stone age life from the desert region. Young Swedish students of archaeology and geology will accompany Dr. Hedin.

EXPLORATIONS AT THE ETOWAH MOUNDS in northern Georgia, have been carried on during two seasons by the Department of Archaeology, Phillips Academy, Andover, Mass., under the direction of Warren K. Moorehead. About one hundred stone graves were discovered which contained engraved shells, various ornaments, pottery vessels and some engraved copper plates. Some of the human figures obtained are comparable to those of the Toltec and Maya.

Several complete graves have been shipped to various museums where they have been set up in natural position. Any museum director desiring one of these graves is requested to communicate with Mr. Moorehead at Cartersville, Georgia.

THE SUL ROSS STATE TEACHERS COLLEGE OF TEXAS has carried on considerable anthropological research in recent years. Investigations in the Big Bend region conducted by Roy Bedichek, R. A. Studhalter and V. J. Smith resulted in the amassing of a large number of specimens which served as a nucleus for the anthropological division of the museum. Particular attention has been devoted to the dry rock shelters of the Trans-Pecos region which is of interest because of its position intermediate between the area of cliff dwellings to the west and the plains to the east. A large number of pictographs and petroglyphs have been recorded.

MR. H. D. SKINNER delivered a lecture on "Maori Decorative Art and its Relationships" before the joint meeting of the American Ethnological Society and the Section of Anthropology and Psychology of the New York Academy of Sciences at the American Museum of Natural History on January 31, 1927.

MR. WILLIAM LLOYD WARNER, formerly a graduate student in the Department of Anthropology of the University of California, is making a survey of the North Australian aboriginals for the new Department organized at the University of Sidney by Professor A. Radcliffe-Brown. Mr. Warner had measured three-hundred natives in Darwin and was preparing to go to Crocodile Island in the beginning of April.

DR. WILLIAM DUNCAN STRONG, Assistant Curator of North American Ethnology of Field Museum of Natural History, Chicago, Illinois, sailed on June 25 from New York with the MacMillan expedition to Labrador. Dr. Strong will spend part of the summer of 1927 excavating the supposed Norse ruins at Nain. The remainder of his stay in Labrador will be devoted to a study of the Naskapi Indians along the lines of both ethnography and physical anthropology. The expedition plans to remain in Labrador until September, 1928.

THE CENTRAL SECTION OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION held a meeting in Chicago, Ill., March 25 and 26, 1927. A large number of interesting papers were presented before the section by its members.

Antiquity, a quarterly review of archaeology, has been founded in England under the editorship of Mr. O. G. S. Crawford, F. S. A. While the journal is to deal primarily with English archaeology, the antiquities of other areas, especially America and Africa will be given prominence. Articles on early history are also to be included occasionally.

Each issue is to contain about 100 pages. The annual subscription is one pound. Those desiring to subscribe should communicate with O. G. S. Crawford, Nursling, Southampton. The first number was issued in March, 1927.

THE WISCONSIN STATE HISTORICAL MUSEUM plans explorations of Indian mounds in the vicinity of Fond du Lac County, Wisconsin under the direction of Charles E. Brown, director. It is believed that some of the mounds mark the sites of Winnebago Indian settlements.

RECENT FINDS in the Belgian Congo of tools, arrowheads and other weapons reported to be closely similar to artifacts of the European neolithic period, are now under the charge of the Belgian government and will be excavated by a competent archaeologist.

PROVISION for cooperation by the Smithsonian Institution with state, educational and scientific organizations in the United States for continuing ethnological researches among the American Indians, and the preservation of archaeological remains, would be made in a bill introduced in the House of Representatives by Mr. Byrns, of Tennessee. The bill would authorize an appropriation of \$20,000, to be expended for this purpose. —*Science*

DR. GEORGE GRANT MACCURDY, of Yale University, completed on February 4 a lecture tour of four weeks. He spoke twice at the University of Illinois, twice for the Davenport Public Museum, and once each for the Surgical Club of Omaha, the University of Iowa, the University of Michigan, the Toledo Art Museum, the University of Buffalo and the Academy of Sciences of Warren, Pa. Dr. MacCurdy's lectures were on prehistoric archaeology and dealt largely with the latest discoveries as well as with the work of the American School of Prehistoric Research, of which he is director. —*Science*

DR. R. R. MARETT gave the Frazer lecture in anthropology at the University of Cambridge.

KNUD RASMUSSEN, the Danish explorer, is preparing for a new Arctic expedition, the aim of which will be to throw light on the emigration of the first men into the Arctic region, investigating the origin of the Eskimos and their relation to other primitive people. —*Science*

PROFESSOR G. ELLIOT SMITH, professor of anatomy in the University of London, delivered the Huxley lecture at Birmingham University on February 1 on "Science and Culture."

DR. GEORGE GRANT MACCURDY of Yale University, Director of the American School of Prehistoric Research, has been designated to represent the Paris Society of Anthropology at the Commemoration of the Two Hundredth Anniversary of the Founding of the American Philosophical Society, to be held in Philadelphia, April 27-30, 1927.

GEORGE BYRON GORDON, director of The University Museum, University of Pennsylvania, for over sixteen years, died suddenly in January. Dr. Gordon was born on Prince Edward Island in 1870. He studied at the University of South Carolina and at Harvard University. After graduating from Harvard, he was chief of the Harvard expedition to Central America, for six years. In 1902 he was appointed assistant curator of anthropology at the University of Pennsylvania, curator in 1904, and assistant professor in 1907. Dr. Gordon was the author of a number of works on archaeology. At the time of his death he was in charge of two expeditions which are operating at Ur and at Beisan. —*The Museum News*

DR. WALDEMAR JOCHELSON gave a lecture on "The Prehistory and Present Ethnography of Siberia and Its Relation to Adjacent Countries" on May 9, 1927 before a meeting of The American Society for Cultural Relations with Russia in conjunction with The American Ethnological Society.

The American Scandinavian Review (March, 1927, 181) announces that Baron Erland Nordenskiöld has received the L. Angrand Foundation prize for his *Comparative Ethnographical Studies*.

DR. BRUNO OETTEKING of the Museum of the American Indian, Heye Foundation, spent last summer in Germany and Switzerland visiting various institutions in the interest of physical anthropology.

DR. A. I. HALLOWELL, University of Pennsylvania, made an investigation in January of the social structure and kinship of the St. Francis Abenaki.

THE LINGUISTIC SOCIETY OF AMERICA has been elected to membership in the American Council of Learned Societies. E. H. Sturtevant and Leonard Bloomfield have been appointed as representatives to the council. The first issue of *Language*, the journal of the Linguistic Society, appeared early in 1927.

PROFESSOR E. SAPIR is in California this summer for the purpose of investigating some of the aboriginal languages. Dr. Jaime de Angulo has begun the study of Karok and is planning to visit other tribes in northern California in the interest of linguistic research.

DR. LESLIE SPIER, who has been for several years connected with the University of Washington, Seattle, has accepted a professorship of anthropology in the University of Oklahoma, which is establishing an independent department in the fall.

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A SURVEY OF THE MATERIAL AND SOCIOLOGICAL CULTURE OF THE MANOBO OF EASTERN MINDANAO

By JOHN M. GARVAN, M.A.

INTRODUCTION

THE following synoptical review was written as Chapters II & III of an extensive ethnological monograph on the Manobo of eastern Mindanao, Philippine Islands. The whole manuscript was written for the Bureau of Science, Manila, while the writer was still a member of the now extinct Division of Ethnology during the years 1907–1914.

In the preparation of his material the writer had the advantage of having lived, and established schools, among the Manobo for four years, during which time he came to acquire an intensive knowledge of their language and customs. Following that period he lived among them, for purposes of further study, all over the country in the guise of a trader and tribesman, in full conformity with tribal ways, even to the blackening of his teeth and to the growing of hip-long hair. Such procedure, opportunity, and knowledge gave him a familiarity with tribal ways and modes of belief and such an insight into the inner life of these remote people as would have been otherwise unattainable except after a far longer sojourn.

Before entering into the introductory details of habitat, etc., it may be well to remark here that in his travels among thirty Philippine tribes, some of them never before visited by white men *nor even by Filipinos*, and one of them by not even the contiguous tribes, he never experienced the slightest danger either to life, limb, or baggage. His experience leads him to believe that the

danger, hostility and ferocious practices attributed to so many primitive peoples are travelers' fantasmagoria or globe-trotters' colorizations. Good sense, sympathy, courtesy and common ordinary decency go far with tribespeople and bring a reciprocation in kind that is so frequently lacking among the great White Tribes.

The habitat of the Manobo with whom this article deals covers that huge rectangle of the great island of Mindanao which is included between the central Cordillera on the West, the hinterland of the Pacific coast on the east, the eighth degree of latitude on the South, and the Northeastern hinterland of the island on the North. The great mass, however, of these primitive tribesfolk live on the middle and upper reaches of the great Agusan river, which spirals its two hundred miles of crocodile-infested, forest-walled waters right through the center of the rectangle from its solitudinous sources in the South till it debouches its ooze-laden bulk into the seas on the Northern coast.

Dotting the banks of the whole Agusan river system—every five, ten or fifteen miles—are the little hamlets of these simple riverfolk. In groups of ten, twenty, thirty houses they stand scattered along the banks in one or two irregular streets—each house perched on its poles above the ground. In the background a few hundred yards away halts the primeval virgin forest, while down below on the surface of the river tug a miscellany of dugouts, at least one for every family head.

In the hinterland or over on the other side of the river but far back in the ancient jungle—one, two, three miles—over slimy leech-infested sinuous trails are the diminutive clearings of these primitive husbandmen, each one with its little hut, on which is grown the modicum of rice, yams, and little vegetable odds and ends for the simple needs of the family.¹

In perusing the following article it must be borne in mind from the beginning that the descriptions and interpretations of

¹ Physical characteristics, including anthropometrical measurements, racial relationships, etc., are dealt with fully in the writer's extensive ms. which has been ready for the press for some time and which is now awaiting a favorable opportunity for publication.

Manobo life are applicable for the most part to the Manobo that have been least influenced by civilization and that still live their ancestral lives, uncommercialized, unsophisticated, and unspoiled, on the upper reaches of rivers and on the serried summits of Sierras, far from the hurry and scurry, bustle and rustle of the busy abodes of Civilization.

GENERAL MATERIAL CULTURE

Dwellings.—For a home the Manobo selects a site that is clearly approved by supernatural agencies and that is especially suitable for agricultural purposes by reason of its fertility, and for defense, because of its strategic position. Hereon he builds an unpretentious, square, one-roomed building at a height of from 1.50 to 8 m. from the ground. The house measures ordinarily about 3 by 5. Posts, usually light, and varying in number between four and sixteen, support the floor, roof, and intervening parts. The materials are all rattan-lashed and seldom consist of anything but light materials taken from the immediate vicinity. The floor is made of slats of palm or bamboo, the roof is thatched with palm-leaves, and the walls are light, horizontal, superimposed poles laid to about the height of the shoulders of a person sitting on the floor. The space between the top of the walls and the roof constitutes a continuous window. This open space above the low house wall permits the inmates, during a fight, to shoot their arrow at the enemy in any direction.

The one ceilingless room serves for kitchen, bedroom, and reception room. There is no decoration or furniture. Scattered around or hung up, especially in the vicinity of the fireplace, are the simple household utensils, and the objects that constitute the property of the owner—weapons, baskets, and sleeping-mat. On the floor farthest away from the door are the hearth frames, one or more, and the stones that serve as support for the cooking pots. A round log with more or less equidistant notches, leading from the ground up to the narrow doorway, admits the visitor into the house.

Under the house is the pig-pen. Here the family pigs and the chickens make a living off such refuse or remnants as fall from

above. The sanitary condition of this part of the establishment is in no wise praiseworthy. The only redeeming point is that the bad odors do not reach the house, being carried away by the current of air that is nearly always passing.

The house itself is far from being perfectly clean. The low, cockroach-infested thatch, the smoke-begrimed rafters, the unswept, dirt-bestrewn floor, the bug-infested slats, the smoke-laden atmosphere the betel-nut-tinged walls and floor, these and other features of a small over-populated house make cleanliness almost impossible. The order and quietude of the home is no more satisfactory. The crying of the babies, the romping and shouting of the boys, the loud talking of the elders, the grunting of the pigs below, the whining and growling of the dogs above, and the noise of the various household occupations, produce, in an average house containing a few families, a din that baffles description. But this does not disturb the serenity of the primitive inmates who laugh, chew, talk and work, and enjoy themselves all the more for the animation of which they form so great a part.

Alimentation.—In the absence of such luxuries as matches the fire-saw or friction method of producing fire is resorted to, although the old steel and flint method is employed.

The cooking outfit consists of a few home-made earthen pots, supplemented by green bamboo joints, bamboo ladles, wooden rice paddles, and nearly always a coconut shell for receiving water from the long bamboo water-tubes.

The various articles of food may be divided into two classes, one of which we will call the staple part of the meal and the other the concomitant. It must be remembered that for the Manobo, as well as for so many other peoples of the Philippine Islands, rice or *camotes* or some other bulky food is the essential part of the meal, whereas fish, meat and other things are merely complements to aid in the consumption of the main food. Under the heading, then, of staples, we may classify, in the order of their importance or abundance, the following: *camotes*, rice, taro, sago, cores of wild palm-trees, maize, tubers and roots (frequently poisonous). Among the concomitant or supplementary foods are the following, their order being indicative of the average esteem in which they

are held: fish (especially if salted), domestic pork, wild boar meat (even though partially putrescent), venison, iguana, larvae from decaying palm-trees, python, monkey, domestic chicken, wild chicken, birds, frogs, crocodile, edible fungi, edible fern, and bamboo shoots. As condiments, salt, *if on hand*, and red pepper are always used, but it is not at all exceptional that the latter alone is available.

Sweet potatoes, taro, tubers, and rice are cooked by steaming. Maize and the cores of palm-trees are roasted over the fire.

There are only two orthodox methods of cooking fish, pork, venison, iguana and chicken: (1) in water without lard; (2) by broiling. Python, monkey, crocodile, wild chicken, and birds must be prepared by the latter method.

When the meal is prepared, it is set out on plates, banana leaves, or bark platters, with the water in glasses when available, or in coconut-shell dippers. On ordinary occasions the husband, wife, children, and female relatives of a family eat together, the unmarried men, widowers, and visitors partaking of their meals alone, but on festive occasions all the male members, visitors included, gather in the center of the floor.

The hands and mouth are washed both before and after the meal. All begin to eat together on the floor. The men eat with their left hands and, on occasions, when the remotest suspicion of trouble exists, keep their right hand on their ever-present weapons. It is customary not to leave one's place after the meal without giving due notice.

Narcotics and stimulating enjoyments.—The most common and indispensable source of every-day enjoyment is the betel-nut quid. It would be an inexcusable breach of propriety to neglect to offer betel-nut to a fellow tribesman. Not to partake of it when offered would be considered a severance of friendship. The essential ingredients of the quid are betel-nut and lime, but it is common to add tobacco, cinnamon, lemon-rind, and several other aromatic elements. At times substitutes may be used for the betel-leaf and betel-nut, if there is a lack of either.

Another important masticatory is the tobacco quid with its ingredients of lime and *mau-mau* juice. This is carried constantly

between the lips. Occasionally, however, the men like to smoke a little tobacco in small pipes or in little leaf cones.

The greatest and the most cherished enjoyment of all is drinking. Men, women, and children indulge, the last two sparingly. In Manoboland the fame of a banquet is in direct proportion to the number who become drunk, sobriety being considered effeminate, and a refusal to drink an affront to the host.

The main drinks are of four kinds: *Cabonegro* toddy, sugar-cane brew, *bahi* toddy, and mead. The first and third are nothing but the sap of the palms that bear their respective names, the sap being gathered in the same manner as the ordinary coconut *tuba*. The second or sugar-cane brew is a fermented drink made from the juice of the sugar-cane boiled with a variety of the ginger plant. It is the choice drink of Manobo and of Manobo deities. The fourth drink mentioned above is mead. It is similar to the last mentioned except that, instead of sugar-cane juice, honey is used in its preparation.

One feature of the drinking is that it is seldom unaccompanied by meat or fish. Hence, on every occasion on which a supply of these may be obtained, there is a drinking bout. Religious sacrifices, too, afford abundant opportunity for indulgence.

Quarrels sometimes ensue as a result of the flowing bowl and war expeditions are proposed, but on the whole it may be said that the Manobo is a peaceful and a merry drinker.

Means of Subsistence.—The Manobo makes his living by farming, fishing, hunting, and his womenfolk clean off the brush, sow broadcast a little rice, plant *camotes*, some taro, maize, and sugar-cane. As the rice crop seldom is sufficient for the sustenance of his household, the Manobo must also rely on the *camote* for his maintenance.

He obtains his supply of fish from the streams and rivers. When the water is deep and the current is not strong, he shoots the fish with a special bow and arrow. When the water is shallow and swift, he makes use of bamboo traps and at times poisons the whole stream.

To provide himself with meat, he occasionally starts off into the forest with dogs and seldom returns without a deer or a wild

boar. He keeps several spring-traps set somewhere in the forest, but it is only during the rainy season that he may be said to be successful with these. He has a trap for monkeys, a snare for birds, a decoy for wild-chickens, and uses his bow and arrow on monkeys and birds.

With meat that he procures from the above sources, together with lizards and pythons, which he sometimes catches, and fungi, larvae, and palm-tree cores which he finds in the forest, he manages to fill in the intervals between the ceremonial and the secular celebrations that recur so frequently during the year, and to keep himself fairly well supplied.

Weapons and implements.—The bolo and, in some districts, the dagger, is the inseparable companion of the Manobo. On the trails he always carries a lance and frequently a shield. For war he has an abaka coat of mail and a bow and arrow. In time of alarm he sets out bamboo caltrops, makes an abattis of fallen trees, and places human spring-traps around his lofty house.

For work he has a bolo and a primitive adze. These with a rice-header, a small-knife, a hunting-spear, a special arrow for hunting, a fish-spear, and perhaps a few fishhooks, serve all the purposes of his primitive life. With one or the other of these he fells the mighty trees of the primordial forest, performs all the operations of agriculture, of hunting, and fishing, builds himself a house, in certain districts hews out shapely canoes, whittles out handsome bolo sheaths, and makes a variety of other necessary and often artistic articles. They are the sum total of his tools and serve him instead of all the implements of modern civilization.

Industrial Activity.—The burden of toil falls on the woman. The man fells the heavy timber once a year, builds the house, hunts, fishes, traps, and fights. Practically all the rest of the daily labor is the woman's share. The man is the master, and as such he attends to all matters that may arise between his family and that of others.

Besides the occupations mentioned above, the man may engage, usually under the stress of a contract or of a debt, in canoe-making, mining, and basket making.

The women weave all the clothes of the family except when imported cloth has been obtained. Most of the clothes, both for men and women, are made of native woven cloth. The woman does all the sewing. A needle of brass wire in the absence of an imported needle and a thread of abaka fiber constitute her sewing outfit.

Almost all the material employed in weaving is abaka-fiber. The dyes are vegetable, their fastness depending upon the duration of the boiling. The Manobo woman, unlike the Mandaya women and women of most other tribes in Mindanao, has never developed the art of in-weaving ornamental figures. The best she can do is to produce warp and weft stripes.

The making of simple earthen-pots is also one of the industries of the woman. Pots are not, however, made in great quantities, the demand being, I think, a little greater than the supply.

Bed mats and rice bags are made out of various materials such as *pandanus* and *buri* in the ordinary Philippine style. The work is done principally by the woman and the supply is not equal, as a rule, to the family needs.

GENERAL SOCIOLOGICAL CULTURE

Domestic life; marital relations.—In his choice of a wife the man is guided to a great extent by the wishes of his relatives, but the woman is given no option. There are no antenuptial relations between the pair, the marriage contract and all arrangements being made by their respective relatives. The transactions usually cover years. The woman's relatives demand for her an amount of worldly goods—slaves, pigs, bolos, and spears—that is almost impossible of payment. The man's relatives, on the other hand, strive to comply but make use of every means to gain the friendship of the other side and thereby bring about a more considerate demand.

When, perhaps after years of effort, an agreement is reached, a great feast is prepared by the two parties. The final payment is made by the man's relatives, and the following day a reciprocal banquet is given by the girl's relatives, in the course of which one half of the value of the payment made by the man's relatives is

returned by the girl's relatives as an indication that "she has not been sold like a slave."

The marriage ceremony consists in the exchange of rice between the bride and the bridegroom. This is followed by a religious rite that consists mainly in determining by divination the fate of the couple.

A marriage is sometimes effected by capture, usually, I think, with the connivance of the woman. But the procedure involves a heavier payment to the throng of armed relatives that invariably set out in pursuit of the captor.

Pre-natal marriage contracts are rare, but child marriage without cohabitation is practiced to a certain extent, especially among the more influential members of the tribe.

The age for marriage is about the age of puberty for the woman and about the age of eighteen for the men. Polygamy is a recognized institution, but is comparatively rare except among those who have the means to pay for the luxury of a second, third, or fourth wife. It presupposes the consent of the first wife, who always retains and maintains her position, there being no jealousy, as far as my observation goes, and few domestic broils. Polyandry is considered swinish, and concubinage is unknown. Divorce is not in accord with tribal customs. The same holds true for prostitution.

There is no evidence of the practice of endogamy which is so widespread among the Oceanic peoples. As a rule, however, the Manobo marries within his own tribe. This is due to his environment, to the hostile relations he ever holds with surrounding tribes, and to the differences of religious beliefs. The only impediments to marriage is consanguinity, but even this may be removed in the case of cousins by appropriate religious ceremonies. Such marriages are rare.

Upon the death of the husband, the wife is considered to belong to his relatives. Upon the presentation of a second suitor, she is re-married in the same manner as on her first marriage, but the payments demanded are not so high.

Marriages seem to result in reciprocal good understanding and happiness. The wife goes about her manifold duties day after

day without a murmur, while her master keeps his weapons in good condition, fishes, and hunts occasionally, goes on a trading trip at times, takes part in social gatherings, lends his voice in time of trouble, and goes off to fight if there should be occasion for it.

Faithfulness to the marriage ties is one of the most striking features of Manoboland. Adultery is extremely rare. The husband lives, at least during the first part of the married life, with his father-in-law, and displays towards his parent-in-law the same feeling that he entertains for his own parents. His wife is always under the eyes of her own parents, so that he is restrained from indulging in any marital bickerings.

Pregnancy, birth, and childhood.—The desire for children is strong. Hence voluntary abortion and infanticide are unknown. In case of involuntary abortion, which is comparatively frequent, the foetus is hung or buried under the house. When the child begins to quicken in the womb, the mother undergoes a process of massage at the beginning of every lunar month.

Parturition is effected almost invariably without any difficulty, the umbilical cord is cut usually with a bamboo sliver, the mother sits up "to prevent a reflux of the afterbirth into the womb," the child is washed, and the operation is over. If the mother cannot suckle her child, it is nourished with rice-water, sugar-cane juice and other light food, but is not given to another to be suckled. In a few days after her delivery the mother is up and back at her work. A little birth-party takes place soon after the birth in which the midwife receives a slight guerdon for her service.

The child is named, without any ceremony, after some ancestor, or famous Manobo, or occasionally receives a name indicative of some thing which happened at the time of the birth. He is treated with the greatest tenderness and lack of restraint. As he grows up he learns the ways of the forest, and about the age of fourteen he is a full-fledged little man. If the child is a girl, she helps her mother from the first moment that she is able to be of any service.

Birth anomalies are rare. I have seen several albinos and several people who might be called in a loose sense hermaphrodites.

Medicine, sickness, and death.—The Manobo attributes some twelve bodily ailments to natural causes, for the cure of such he believes in the efficacy of about as many herbs and roots. For wounds, tobacco juice and the black residue of the smoking pipe are considered a very good remedy. Betel-nut and betel-leaf are a very common cure for pains in the stomach. The gall of snakes has a potency of its own for the same trouble.

As a rule, all natural remedies are applied externally until such time as they prove unavailing, and the symptoms assume a more serious aspect.

Whenever an ailment is of a lingering character, especially if accompanied by increasing emaciation and not classifiable as one of the familiar maladies, it is attributed to magic causes. Certain individuals may have the reputation of being able to compound various noxious substances, the taking of which, it is believed, may superinduce lingering ailments. The pulverized bone from a corpse or the blood of a woman dried in the sun and exposed to the light of the moon and then mixed with finely cut human hair, are examples of such compounds. Other magic medicines exist such as aphrodisiacs, and bezoar-stones. When it is decided that the ailment is due to any of these magic causes, neutralizing methods must be resorted to, the nature and application of which are very secret.

Epidemics are attributed to the malignancy of sea-demons, and by way of propitiation, and inducement to these plague-spirits to hurry off with their epidemic, offerings placed on rafts are launched in the nearest rivers.

As soon as it is realized that the malady is beyond the power of natural or of magic resources, recourse is had to the deities or good spirits, as will be explained under the head of religion. Upon the occurrence of a death wild scenes frequently take place, the relatives being unable to restrain their grief. Signals, by bamboo horns, are often boomed out to neighboring settlements to warn them to be on their guard. War-raids to settle old feuds are sometimes decided upon on these occasions, so all trails leading to the houses are closed.

The corpse is washed and laid out on its back in its best apparel. The coffin is a hexagonal piece of wood made out of a log with a three-faced lid also hewn out of a log. The body is often wrapped in a grass mat before being laid in the coffin.

Before decomposition sets in, the coffin is borne away by men amidst great grief and loud shouts. A high piece of ground is selected in a remote part of the forest for the last resting place of the deceased. A shallow grave is dug out, a roof of thatch is erected, a pot-ful of boiled rice is placed over the grave as a last collation for the departed one, and the burial party hurry back in fear to the settlement. As soon as they can provide themselves with temporary huts they almost always abandon the settlement.

Social and family enjoyment.—Music, instrumental and vocal, and dancing are the two great sources of domestic enjoyment. There are several kinds of instruments, which I will mention in the order of their importance and frequency of use. The drum, the gong, four varieties of flutes, four species of guitars, a violin, and a Jew's harp. With the exception of the first two, the instruments are made of bamboo and are, in every sense of the word, of the most primitive kind. The strings are of vine, bamboo, or abaka fiber.

The drum is the instrument of most frequent use. It is played during all dancing and at other times when a tribesman feels inclined. It is used as a signal to give alarm or to call an absent one. During the dance, religious or secular, it is nearly always accompanied by the gong. The use of the other instruments seems to depend upon the caprice of the individuals, though two of them appear to have a religious character.

With the exception of the gong and the jew's harp, all of these instruments can be made to produce varied and pleasing rhythm or music, according to the knowledge and skill of the performer. Each strain has its appropriate name, taken frequently from the name of the animal that it is supposed to imitate.

Instrumental music, in general, is of minor tonality, melancholy, weird, and suggestive in some ways of Chinese music.

Bamboo stampers are sometimes used to give more animation to a dancing celebration, and bamboo sounders are attached to looms to draw attention to the industry of the weaver.

Songs are always sung as solos. They are all extemporaneous and for the most part legendary. The language is archaic and difficult for an outsider to understand. The singing is a kind of declamation, with long slurs, frequent staccatos, and abrupt endings. Of course, there are war-songs that demand loudness and rapidity, but on the whole the song-music is as weird and melancholy as the instrumental. Ceremonial chants do not differ from secular songs, except that they treat of the doings of a supernatural world, and are the medium through which supplications are made to supernatural beings.

Perhaps the greatest of all social enjoyments, both for men and deities, is the dance. It is performed by one person at a time. Men, women and children take part. Dressed in a woman's skirt and decked out in all obtainable finery, the dancer keeps perfect time to the rhythm and clang of the gong.

System of government, political organization, and social control. Manoboland is divided into districts, more or less extensive, which are the property of the different clans. Each district is under the nominal leadership of the warrior-chiefs and of the more influential men. In time of peace, these districts are open to everybody, but in time of war—and wars were formerly very frequent—only persons of tried friendship are permitted to enter.

A clan consists of a chief whose authority is merely nominal, and a number of his relatives varying from twenty to perhaps two hundred souls. The whole system is patriarchal, no coercion being used unless it is sanctioned by the more influential members, and approved by the consensus of opinion of the people, and in accord with traditional custom.

The authority of the elder people is respected as long as they are physically and mentally able to participate in public gatherings. Those who have distinguished themselves by personal prowess always command a following, but they have a greater influence in time of trouble than in time of peace. Perfect equality reigns among the members of the clan except in the one respect that the recognized warriors are entitled to the use of a red head-kerchief, jacket, and pantaloons, each of these articles, beginning with the first being added as the number of people whom the warrior has killed is increased.

The chieftainship naturally falls to one who has attained the rank of *bagani*, that is to one who has killed a certain number of persons, provided he is otherwise sufficiently influential to attract a following. His duties consist in lending his influence to settle a dispute and in redressing the wrongs of those who care to appeal to him. As a priest he is thought to be under the protection of a war-god, whose desire for blood he must satisfy.

The *bagani* also acts as a medicine man, for he is reputed to have certain magic powers both for good and for evil. The natural secretiveness of the *bagani* made it difficult for me to secure much information on this point, but his power of harming at a distance and of making himself invisible are matters of general belief. In his character as a priest, he performs ceremonies for the cure of diseases in which fluxes of blood occur.

Methods of warfare. There is no military organization in Manoboland. The greater part of those who form a war-party are relatives of the aggrieved one, though it is usual to induce others of acknowledged prowess to take part. No resentment is harbored by the opposing party toward paid warriors.

Vendettas and debts are the most usual cause of war, and not, as has been reported, glory and the capture of slaves. There is never wanting on the part of those who originate the war a reasonable motive. The vendetta system is not only recognized, but vengeance is considered incumbent on the relatives of one who has been killed, and, as a reminder, a piece of green rattan is sometimes strung up in the house. The rattan suggests that until it rots the wrong will not be forgotten. If the father is unable to avenge the wrong, he bequeathes the revenge to his sons as a sacred legacy. Sometimes another person is deputed to take vengeance, in which case no blame is attached to him.

The peculiar custom prevails of killing a third party who may be neutral, or of seizing his property, but I have known such an act to be resented. As a result of this custom a war-party returning from an unsuccessful raid is dangerous.

There is usually no formal declaration of war. In fact, the greatest secrecy is generally observed, and in urgent cases a body of ambushers proceed at once to kill the first one of the enemy

that happens to pass their lurking-place. As a rule the location of the enemy's house and his actions are watched for weeks, perhaps for years, until a favorable opportunity for attack presents itself. The usual time for undertaking an expedition is during the rice-harvest and after a death. The preparation consists in acquiring a thorough knowledge of the enemy's house and its environment. Everything being ready, the warriors assemble, a sacrifice is made, omens taken, and the band starts out at such an hour as will enable them to reach the vicinity of the enemy about nightfall. From the last stopping-point a few warriors make a final reconnaissance in the gloom of the night, release the enemy's traps, and return. The whole band, numbering anywhere from ten to one hundred, advance, and, surrounding the house, await the dawn, for it is at the first blush of the morning that sleep is supposed to be the heaviest. Moreover, there is then sufficient light to enable the party to make the attack. Hence the peep of dawn is almost always the hour of attack.

If the enemy's house is within spear-reach, it is usually an easy matter to put the inmates to death, but if it is a high house, and especially, if the inmates are well prepared, a warrior climbs up silently under the house and spears one of them. This, followed by the killing of pigs and by the battle-cry, usually causes consternation. A battle of arrows then takes place, there is a bandying of fierce threats, taunts, and challenges, and the attacking party endeavors to set the roof on fire with burning arrows. If they succeed the inmates flee from the flames, but only the children, as a rule, escape the bolo and spear.

It is seldom that the attack is prolonged for more than a few hours and it is seldom that the attack is unsuccessful, for if other means fail hunger and thirst will drive the besieged ones to flight, in which case they become the victims of the besieging warriors. If one of the latter is wounded or killed, the attack is abandoned at once, such an occurrence being considered extremely inauspicious.

Each warrior gets the credit for the number of people whom he kills, and is entitled to the slaves that he may capture. The warrior-chiefs open the breasts of one or more of the headmen of

the slain, insert a portion of their charm-collars into the opening, and consume the heart and liver in honor of their war-spirits.

During the return home, the successful warriors make the forest resound with the weird ululation of the battle cry, and adorn their lances with palm-fronds. Upon arrival at their settlement, they are welcomed with drum and song and loud acclaim. A purificatory bath is followed by a feast in which each one recounts the minutest details of the attack. After the feast some of the captives may be given to warriors who were unlucky or who desire to satisfy their vengeance. The captives are occasionally despatched in the nearby forest.

Ambush is also a very ordinary method of warfare. Several warriors station themselves in a selected position near the trail and await their enemy.

Whenever there is open rupture between two parties, it is customary for each one of them to erect a high house in a place remote and difficult of access, and to surround it with such obstacles as will make it more dangerous. In these houses, with their immediate relatives, and with such warriors as desire to take their part, they bide their time in a state of constant watch and ward.

When both parties in a feud are tired, either of fighting constantly or of taking refuge in flight, a peace-making may be brought about through the good services of friendly and influential tribesmen. On the appointed day, the parties meet, balance up their blood debts and other obligations and decide on a term within which to pay them. As an evidence of their sincere desire to preserve peace and to make mutual restitution, a piece of green rattan is cut by the leaders, and a little beeswax is burnt, both operations being symbolic of the fate that will befall the one that breaks his plighted word.

Intertribal and analogous relations. Intertribal relations between pagan Manobo and Christianized Manobo, and between the former and Bisaya, were comparatively pacific during my residence in the Agusan Valley. Between Manobo and other mountain tribes, excepting Mangguangan, the relations were, with casual exceptions, rather friendly, due, no doubt, to the lessons learned by the

Manobo in their long struggles with Mandaya, Banuaon, and Dibabaon up to the advent of the missionaries about 1877. The Manobo are inferior to the tribes mentioned in tribal cohesion and in intelligence. Their dealings, however, with Mangguangan who are undoubtedly their physical and intellectual inferiors, present a different aspect. With the Mandaya and D'ibabaon, they have helped to reduce the once extensive Mangguangan tribe to the remnant that it is today.

Manobo and other mountain tribes have very little to do with each other. Only particular individuals of the various tribes, who have the happy faculty of avoiding trouble, travel among other tribes. In general, Manobo are afraid of the aggressiveness of their neighbors (excluding the Mangguangan), and their neighbors fear Manobo instability and hot-headedness, hence both sides pursue the prudent policy of avoidance.

Inter-clan relations have been comparatively peaceful since the establishment of the special government in the Agusan Valley. Occasional killings took place formerly and probably still take place in remote regions, notably on the upper Baobo. It is probable that, since my departure from the Agusan in 1910, these murders take place much less frequently, as the special government organized in 1907 has made great headway in getting in contact with the more warlike people of the interior.

Up to the time of my departure dealings between the various clans were purely commercial and of a sporadic nature. Old enmities were not forgotten, and it was considered more prudent to have as little as possible to do with one another. On all occasions when there is any apprehension of danger arms are worn. During meals, even on festive occasions, the Manobo eats with his left hand, holding his right in readiness for an attack. The guests at a feast are seated in such a way that an attack may be easily guarded against. Various other laws of intercourse, such as those governing the passing of one person behind another and unsheathing a bolo, regulate the dealings of man with man and clan with clan.

Commercial relations between the Bisaya and Manobo, both pagan and Christianized, constitute, on the part of the first mentioned, (Bisaya) a system of deliberate and nefarious spoliation

which has been denounced from the time of the first missionaries and which, by the establishment of trading-posts by the government, eventually will be suppressed. Absolutely inadequate values both in buying and selling commodities, use of false weights and measures, defraudation in accounts, demands of unspeakably high usury, wheedling by the *puanak* or friendship system, advancing of merchandise at exorbitant rates, especially just before the rice-harvest, and the system of commutation by which an article not contracted for was accepted in payment at a paltry price,—these were the main features of the system. It may be said that the resultant and final gain would amount to between 500 and 1000 per cent.

The bartering was carried on in a spirit of dissimulation, the Manobo being cozened into the idea that the sale was an act of friendship and involved a comparative loss on the part of the Bisaya. A period, more or less extended, was allowed him wherein to complete the payment, with a promise of further liberal advances.

Since the Manobo has become aware of the stupendous gain of the Bisaya, he is not so prompt in his payments and in fact often thwarts his creditor by deliberate delays. Hence the frequent bickerings, quarrels, and ill-will that are ever a result of these commercial relations.

It is needless to say that throughout the valley there was great fluctuation of prices. Moreover the Manobo sold a part of his rice in harvest time at 50 centavos a sack, and in time of scarcity repurchased it at as much as 5 pesos.

The internal commerce of the Manobo presents, on the whole, a very different spectacle. It consists in simple exchanges. There is no circulation medium. The units of exchange are slaves (valued at from 15,00 to 30,00 pesos each), pigs, and plates, but with the exception of the first, these units are not constant in value.

The measures used are the *gantang*, a cylindrical wooden vessel with a capacity of from 10 to 15 liters; the *kaban*² which contains 25 *gantang*; the yard, measured from the end of the thumb

² Called also *bakid* and *anega*. A *kaban* is measured by counting 25 *gantang*.

to the middle of the sternum; the span, the fathom, the finger, and the finger joint.

Slavery is a recognized institution, but since the diminution of intertribal and inter-clan wars the number of slaves has diminished. Slaves were originally obtained by capture and then passed from hand to hand in making marriage payments. It sometimes occurs, in an exigency, that a man delivers a child, even his own, into captivity.

The slave is not generally ill-treated but has to do all the work that is assigned to him. He has no rights of any kind, possesses no property except a threadbare suit, and is usually not allowed to marry. However, he receives a sufficiency of food and seems to be contented with his lot.

Administration of justice: general principles and various laws. It is frequently stated by Bisaya and others that Manobo justice consists in the oppression of the weak by the strong, but I have not found this to be true. The Manobo is too independent and too much a lover of revenge to brook coercion. He recognizes a set of customary rules, and any departure from them is resented by him and by his relatives.

Nearly all the violations of right are considered as civil, and not as criminal wrongs, and upon due compensation are condoned. Failure on the part of the offender to make this compensation leads the aggrieved man and his relatives to take justice into their own hands.

The guilty one in nearly every case is allowed a fair and impartial hearing in the presence of his own relatives. The matter is argued out, witnesses are called, and the offender's own relatives generally exert their influence to make him yield with good will. Hence the feast that follows nearly every case of successful arbitration.

One of the fundamental customs of the Manobo is to regard as a duty the payment of one's debts, and this duty is performed sacredly and often at a sacrifice. Another fundamental custom is the right of revenge. Revenge is a sacred duty that is bequeathed from generation to generation, and from it result the long and terrible feuds that have devastated Manoboland.

Customary law is based on the intense conservation of the Manobo, fostered by the priests and strengthened by a system of religious injunctions and interdictions. Anyone who violates these taboos or interdictions becomes liable for all the evil consequences that may follow.

Property rights are understood and rigidly upheld, so much so that there seems to be no conception of a gift as such. Large tracts of land are considered the property of a clan, but anyone on good terms with the clan may settle on the land and may have all the rights of a clansman except those of fishing. Each individual becomes the temporary owner of the land that he selects and of the crops that he plants thereon. As soon as he abandons the land it becomes the collective property of the clan. Land disputes are unknown.

Property that is the result of one's labor or of one's purchase belongs to the individual except in the case of women, children, and slaves. Loss of, and damage to, property belonging to another must be made good, no excuse being admitted.

The law of contracts is stringent, but a certain amount of consideration is shown in case of a failure to fulfill a contract on time, unless a definite stipulation to the contrary has been previously made. All contracts are made in the presence of witnesses, and frequently a knotted rattan slip, representing the number of items or the number of days to elapse before payment, is delivered by the one who makes the contract.

Nearly all transactions are made on a credit basis, hence frequent disputes arise out of the failure of one party or the other to fulfill the terms of the contract. The failures are sometimes due to the fact that one individual man depends on payment from another in order to satisfy his debt to a third party. Undue delay on the part of a debtor finally gives the creditor the right to seize the property of the debtor, or even the property of a third party. Such an action is not common and is always taken under the stress of exasperation after repeated effort to collect have proved unavailing. As a rule the relatives of the debtor prefer to settle the obligation rather than to allow matters to become too serious,

but it happens at times that they, too, are obstinate and allow things to take their course.

No interest is charged on loans except in the case of paddy. There are few loans made, and no leases or pledges. These last imply a distrust that is not pleasing to the Manobo.

The law of liability is very strict. For instance, if one should ask another to accompany him on a journey and the latter should fall sick or die, the former would be liable for his death. If one should die in the house, thereby causing the abandonment of it, the relatives of the dead man would have to pay the value of the house. Similar instances are of frequent occurrence and can be readily understood. This liability law extends to evils supposed to be due to the violation of taboos and to the possession of magic powers.

There is a system of fining that serves, harsh though it may seem, to maintain proper deference to the person and the property of another. Thus, spitting on another, rudely grasping another's person, entering another's district without due permission, fishing in a river without the owner's leave, are a few of the many cases that might be adduced. The fine varies according to the damage and amount of malice that may be proved in the subsequent arbitration.

Regulations governing domestic relations and property, customary procedure in settlements of disputes. The house belongs collectively to the builders. The property in it belongs to the male inmates who have acquired it.

The elder brother takes possession of the property of his deceased brother, unless the eldest son of the deceased is of such an age as to be capable of managing the household. In case the deceased did not have a brother, a brother-in-law or son-in-law becomes the representative of the household. The eldest son inherits his father's debts and must pay them.

There is so little property in the ordinary Manobo home that there are no disputes as to the inheritance. After a death the house is abandoned and the grief-stricken relatives scurry off with their baskets, mats, and simple utensils to make another home in a solitary part of the forest.

The relations both prenuptial and postnuptial between the sexes are of the strictest kind. All evil conduct from adultery down to immodest gazing is punished with appropriate fines and even with death. The fines vary from the equivalent of three slaves down to that of a few pesos.

The marriage contract is very rigid. I know of few cases in which the stipulated price was not paid prior to the delivery of the fiancée. In case of the death of one of the affianced parties the payments made must be refunded. In case of the refusal of the bridegroom to continue his suit even though there has been a fault on the part of the bride or of her relatives, he loses all right to recover. Should the bride's people, however, decide to discontinue the proceedings, they must return the previous payments and make compensation for the trouble and expenses incurred during the previous transactions. No case of a discontinuance of the marriage proceedings ever passed under my observation.

The father has theoretically full power over his wife and children, but in practise his domestic jurisdiction is of the most lenient kind. Marital affection and filial devotion reign in the household.

The husband may not marry a second wife during the lifetime of the first without the latter's consent. This rule, as well as the lack of sufficient worldly possessions to purchase another helpmate, makes polygamy comparatively infrequent.

The bridegroom is supposed to live with his father-in-law or with the previous owner of his wife, very often with his wife's brother, but nearly always sets up his own establishment a few years after marriage.

With the exception of adultery, fornication, rape, and wanton homicide, all crimes presuppose an appeal to arbitration. The author of another's death is the one on whom vengeance must be taken if it is possible.

When an outraged party is unable to obtain redress by arbitration or by direct reprisal, he avenges himself on a third part, preferably a relative of his enemy, by killing him or by seizing his property. He thus brings matters to a head. It is usual to

compound with the relatives of this third party, either for the death or for the seizure, on condition that they will league themselves with the one who is seeking revenge against the original wrongdoer or that they themselves will undertake, as his paid agent, to wreak vengeance on his enemy.

Minor offences are punished by fines that are determined by arbitration. These fines vary in amount, but nearly always include a feast, more or less elaborate, the expenses of which are borne by that party that lost the case.

The arbitration of a question may be made immediately after it has arisen or it may not be brought for weeks or months. When the discussion has begun it is not considered politic for either side to yield at once. Threats are bandied between the principals until, through the influence of friendly chiefs, they are brought together. Then the relatives discuss the affair, each side exaggerating its own view of the question. It is only after lengthy discussions, and the use of similitudes and allegories, loud shouts, dissimulation, and through the sagacity and influence of the chief men that the opinions of the parties are so molded that an agreement is reached.

It may be necessary to determine the offence. This is done by witnesses who give, as far as I have been able to judge, truthful testimony. Whenever the veracity of a witness is doubted he may be obliged to take a kind of oath which consists in the burning of beeswax. In the case of suspects, ordeals are employed. They consist of making the parties under suspicion either plunge their hands into boiling water, or undergo the diving test, or take the candle ordeal.

Circumstantial evidence is admissible. By means of it the authors of hidden crimes are often brought to punishment after years of patient waiting.

It is customary for the guilty one to make at least a partial payment immediately after the arbitration, and to treat the assembly to a banquet in which it is good form for the two opponents to close the breaches of friendship by generous quaffs to each other's health.

RELIGIOUS IDEAS

Survey of religion.—A study of Manobo religion is difficult because of the natural secretiveness and suspiciousness of this primitive man, because of his dependence for his religious ideas on his priests, because of variations and apparent contradictions that arise at every step and finally, because of his inability to expound in a satisfactory manner the beliefs of his religious system.

The religious belief of the Manobo is an essential part of his life. On his person he often carries religious objects. The site for his home is not selected till omens and oracles are consulted. In his method of cooking there are religious rules. He cannot procure his meat from the forest nor his fish from the streams without making an appropriate offering. He sows and harvests his rice under the auspices of certain deities. His hunting dogs are under the protection of a special divinity. His bolo and his spear must answer a special magic test. He cannot go forth to fight till divination and sacrifice have assured him success. All the great events of his life—his marriage, the pregnancy and parturition of his wife, death, burial, war—all are consecrated by formal, and often public, religious rites.

As far as I have been able to judge, fear of the deities, of evil spirits, of the dead, of all that is unintelligible, unusual, somber, is the mainspring of the Manobo's religious observances and beliefs.

In order to detect the evils, natural and supernatural, to which he may be exposed, he has recourse to dreams, divination, auguries and omens, and, in more serious cases he calls upon his priest to ascertain by invocation, oblation and sacrifice, the course of the evil that has befallen him, or of the danger that he fears.

Though there are two principal classes of beneficent divinities, little is known of one of these classes beyond its supposed existence. The other class is made up of humanlike deities called *diuata*, that retain a fondness for this world and the good things thereof. They select mortals for their favorites, and, through them, keep themselves provided with such earthly delicacies as they may desire, even though they may have to plague their mortal votaries in order to secure them.

There is another category of spirits of a slightly different character whose desire is blood. These are the war-divinities that select certain individuals for their champions and urge them on to deeds of valor, with the hope of procuring blood.

In contradistinction to the above divinities are others of a malignant or dangerous character. Chief among them are the *busau*, black, hideous spirits that dwell in dark desolate places, and who are for the most part implacable enemies of man. To counteract the machinations of these spirits, the beneficent deities are called upon by Manobo priests, and feasted with song and dance and sacrifice. Pleased with these tokens of friendship, the good spirits pursue the evil ones, and even engage in battle with them. The *tagbanua* are a class of local spirits that reign over the forest tracts and mountains. They are not of an unkindly nature as long as a certain amount of respect is paid them. Hence the practice of making offerings during hunting and other forest occupations.

Among the other inimical spirits are the rice-pilferer *Dagau*; *Anit* the thunderbolt-spirit; numerous epidemic-demons; the goddess of consanguinous love and marriage; the spirit of sexual excess; the wielder of lightning, and the manipulator of the winds and storms; the cloud-spirit and various others.

Agricultural and hunting operations are all performed under the auspices of gods and goddesses. Thus *Hakiadan*, and *Tap-hagan* take care of the rice during sowing and harvest time respectively; *Tagamaling* attends to other crops; *Libtakan* is the god of sunshine and good weather; and *Sugujun* is the god of the chase.

There are other gods—*Mandait*, the birth-deity; *Ibu*, the goddess of the after-world; *Makalidung*, the founder of the world; *Manduyangil*, the ferryman; and *Yumud*, the water-wraith.

The performance of nearly all the greater religious rites is left to the priests who are of two classes,—*bailan* or ordinary priests, and *bagani* or war-priests. It is the prerogative of these priests to hold communication with their familiar spirits, to find out from them their desires, to learn the doings of the unfriendly spirits, and the means to be taken for a mitigation of the evil in question.

The ordinary priests are simple intermediaries, claiming no wondrous powers, making use of no deceptive nor mercenary methods, as far as my observation goes, with no particular dress and little paraphernalia, having no political influence, but possessing, in all that concerns religion, paramount authority. Their title to priesthood is derived from the violent manifestations (such as trembling, perspiring, belching, semi-unconsciousness) that are believed to be a result of communication with their familiars.

The war-priests have blood-spirits for their favorites and, accordingly, perform their rites only in matters that concern war and wounds.

Ceremonial accessories consist of a few heirlooms, a small altar-house, a wooden oblation tray, a one-legged stand, a sacrificial table, ceremonial decorations, sacred images, and sacrificial offerings.

The religious rites peculiar to the ordinary priests, consist of betel-nut offerings, the burning of incense, invocations, prophylactic fowl-waving, omen-making, blood unction, the shield ceremony, the death-feast, the rice-planting ceremony, the hunting rite, and the sacrifice of pig and fowl.

The ceremonies peculiar to the warrior-priests are—besides the betel-nut tribute to the war-spirits and invocation offered to them—: invocation and offerings to the spirit-companions or “souls” of the living enemy, special forms of divination connected with war, a special invocation to the omen bird preparatory to the war-raid, placation and propitiation of the tutelary war-deities by invocation, by sacrifices and by ceremonial cannibalism.

The main features, then, of the Manobo religious system are:—

(1) A firm, traditional belief in the existence of anthropomorphic beneficent deities that will help the Manobo *if he supplies them with the offerings they desire* but if not, that will allow and *even cause* evil to befall him.

(2) A belief in the existence of forest-spirits and sky-spirits, who on occasions may become hostile and must be propitiated.

(3) An absolute reliance on priests, who are the favorites of one or more of the friendly divinities, and through whose mediation he secures their good will and assistance.

(4) The fear of the dead who are thought to harbor an envious feeling toward the living.

(5) The frequent consultation or interpretation of omens, auguries and oracles for ascertaining future events.

(6) A rigid adherence to a numerous set of taboos, some based on religious ideas, some founded on sympathetic magic.

(7) A frequent application of the principle of sympathetic magic by which one act is believed to be productive of a correlated result.

(8) A conscientious avoidance of everything disrespectful in word and act towards one of the brute creation.

(9) A belief in two spirit-companions or souls that accompany each mortal from birth till death.

(10) A belief in the possibility of capture of one of these spirit-companions by malignant spirits.

(11) A universal and constant faith in the existence of an after-world and of the survival of at least one spirit-companion therein.

(12) A belief in dreams as being often indicative of future evil.

(13) A belief in secret methods that may be productive of harm to others.

(14) The recourse to oaths and ordeals for the enforcement of promises and for the determination of guilt.

(15) The unmistakable apotheosis of bravery as illustrated by the warlike character of one class of deities.

The peculiar fear, entertained by the lowly votary, for lonely mountains, odd-shaped rocks, gloomy caves and holes, hot springs and similar formations of nature, his belief that planted things have "Souls" and his peculiar respect for animals and insects—these and minor manifestations may point perhaps to a former nature and animal worship, but at present there is no indication of such. The Manobo's conduct in the presence of such objects and phenomena is one of fear toward, and placation of, the agencies which, he believes, produce the phenomena or of the spirit-owners of the objects that come across his path. It is to them alone that he pays his respect, and not to the material object or manifestation that has become the object of his perception.

Though one of the characteristics of Manobo religion is the apotheosis of bravery, as is apparent from the warlike character of the divinities, and from the general desire to die the death of the slain, yet I find no trace of ancestor worship. The dead are feared, their burial-place is shunned, their character is deemed perfidious, and relations with them are terminated by a farewell mortuary feast after which it is expected that they will depart, to vex the living no more.

MENTAL AND MORAL CHARACTERISTICS

The Manobo intellectual attainments are very limited. He counts on his fingers and on his toes, or by means of material objects such as grains of corn. He has no system of writing and does not know how to read. His "letters" and his "contracts" are material objects in the shape of bolos and other things, sent from one person to another with an oral message, or strips of rattan with knots. His method of counting is decimal, and comprehends all numbers up to a hundred, though I am inclined to think that this last number represents infinity to him.

The reckoning of time is equally simple. The day is divided into day and night, the hour being indicated by stretching out the arm and open hand in the direction of that part of the sky where the sun or the moon would be at the time it is desired to indicate.

The month is not divided into weeks but the lunar month itself is carefully followed, each phase of the moon having its distinct name, though it is only in the case of the plenitude of each phase that they agree on its name.

Years are reckoned by the recurrence of the rice-harvesting season, which varies according to the climate and geographical position of different regions. It is seldom that anyone can count backwards more than four or five years unless he can help his memory by some event such as an earthquake, an extra heavy flood, the arrival of the Spanish missionaries, the Philippine insurrection, or the growth of trees, but as a rule no attempt is made to determine the number of years that have elapsed since any event. I have seldom met a Manobo who had any idea as to his age, or any ability to judge approximately of the age of another. Historical knowledge is confined almost entirely to events that have occurred within one's lifetime. There are few traditions that have any historical value, and even in these there is an element of the wonderful that makes them unreliable as guides.

It is obvious that the pagan Manobo has made no advance along academic lines, due to the fact that he never has had an opportunity afforded him, but judging of his intellectual ability by that of the Christianized Manobo it is not inferior to that of the Bisaya. I had experience in organizing and conducting schools

among the *conquistas*, and it has been my experience that, *ceteris paribus*, they advance as rapidly as Bisaya. If the *conquistas* have not progressed as far intellectually, it is due to lack of facilities and not to any inherent inability to learn.

Knowledge of astronomy is limited among the Manobo to the names of a few of the principal stars and constellations. The nature of the stars, moon, sun, eclipses and kindred phenomena are all explained in mythological tales, from a belief in which no amount of reasoning can move them. The old story that the comet is the harbinger or bearer of diseases is in vogue.

Arts, such as painting and architecture, are unknown, though Manobo can carve rude and often fantastic wooden images, and make crude tracings and incisions on lime tubes and baskets.

Notwithstanding their lack of scientific and aesthetic knowledge, their observation of nature is marvelous. This is obviously due to long familiarity with the forest, the streams, and the mountains. From his boyhood years the Manobo has lived the life of the forest. He has scanned the trees for birds and monkeys, the streams for fish. Living, as he generally has, within a definite district, and roaming over it in search of game and other things to eat, at the same time keeping a close watch for any variation that might indicate the presence of an outsider, he has come to possess those marvelous powers of sight and of observation that would astonish the average white man. Within his own district the position of every tree is known. Every stream and every part of it, every mountain, every part of the forest is known and has its appropriate name. The position of a place is explained in a few words to a fellow tribesman and is understood by the latter.

Trees and plants are recognized, and their adaptation, in a great many cases, for certain economic uses is known, though I think that in his knowledge of the latter the Manobo is inferior to both the Bisaya and the Mandaya, as he is undoubtedly of a more conservative and less enterprising disposition.

The Manobo character has been so vilified by missionaries, and by all the Bisaya who have dealings with them, that it deserves a clearance from the aspersions that have been cast upon it. In dealing with the Manobo, as with all primitive peoples, the

personal equation brings out more than anything else the qualities that underlie character. Several of the missionaries seem not to have distinguished between the *pagan* and the *man*. To them the pagan was the incarnation of all that is vile, a creature whose every act was dictated by the devil. The Bisaya regarded him somewhat in the same light, but went further. He looked upon him as his enemy because of the many acts of retribution, even though retribution was merited, that had been committed by the Manobo or by his ancestors. He entertained a feeling of chagrin and disappointment that this primitive man was unwilling to become an absolute tool in his hands for *thorough* exploitation. Hence no name, however vile, was too bad for the poor forest-dweller who refused to settle near his plantation and toil—man, woman, and child—for an utterly inadequate wage. His feelings toward the *conquistas*, is little, if at all better.

Upon first acquaintance the Manobo is timid and suspicious. This is due to the extreme cautiousness that teaches him to guard a life that among his own people has only a nominal value. When in the presence of strangers for the first time, he remembers that reprisals have been bandied from time immemorial between his people on the one hand, and Bisaya on the other, and he realizes that without proper care, reprisals might be made on him. Again, if the visitor has penetrated into his district, his suspicion may be aroused to its full force by calumnious reports or rumors that may have preceded the visitor's arrival. My own visits were frequently preceded by rumors to the effect that I had magic power to poison or to do other things equally harmful; that I was a soldier in disguise, or by other similar reports. But in these cases and all others one may allay the timorousness and suspicion of these primitive people, to a great extent, by previous announcement of one's visit and intentions and upon arrival in their settlement, by refraining from any act or word that might betray one's curiosity. Surprise must not be expressed at anything that takes place. The mere question as to what, for instance, is beyond such and such a mountain or where are the head-waters of such and such a stream, may start up the full flame of suspicion. Hence prudence, a kind, quiet but alert manner, a good reputation from

the last visited locality, and a distribution of trifling gifts is always efficacious in removing that feeling of distrust which these primitive people feel towards a stranger.

Another charge is that they are revengeful. They certainly believe in "an eye for an eye, a tooth for a tooth." Revenge for an unatoned wrong is a stern fundamental, eternal law, sanctioned by Manobo institutions, social, political, and religious; one that is consecrated by the breath of the dying and passed on from generation to generation to be fulfilled; but it has one saving clause, *arbitration*. Hence a stranger must inform himself of such past happenings as might jeopardize him. The Manobo has a very limited conception of the extent of the outside world and of the number of its inhabitants, and he is inclined to believe that one American, for instance, knows every other one and may be related by blood to any other. Hence any imprudent action on the part of one may draw down revenge on the head of another,³ relative or not, for even innocent third parties may, by Manobo custom, be sacrificed to the unsatisfied spirit of revenge. The danger, however, in which a stranger might find himself from this cause, is easily eliminated by questioning the people as to who had wronged them on previous occasions; and should he learn that he is considered a party to the wrong through identity of blood or of race with the guilty one, he must gently suggest a plan for arbitration at some later date, and in other pacific ways, avert the revenge from himself.

It is, moreover, affirmed that Manobo are treacherous. If by treachery is meant a violation of faith and confidence, they cannot be said to be treacherous. They kill when they feel that they are wronged. I know of few cases where they did not openly avow their feelings and demand reparation. Refusal to make the reparation demanded is equivalent to a declaration of war, and in war all is fair. It is every man's duty to safeguard himself as best he can. The Manobo, Mandaya, Mangguangan and Dibabaon houses erected in strategic positions throughout the interior of

³ It is almost certain that the death of Mr. H. M. Ickis, geologist, of the Bureau of Science, Manila, was partly due to the capture and exile of one Gubat of the upper Umaiam some 15 or 20 years ago.

eastern Mindanao bear witness to the fact that these people recognize the principle that all is fair in war. The fact that they frequently carry their spears and shields when on the trail, and in time of trouble accompany their womenfolk to the farms and guard them there, is sufficient evidence of the fact that every means must be taken to safeguard one's self and interests from an enemy. But let a case be once arbitrated, and beeswax burned or other solemn manifestation of agreement be made, and it is my opinion that the pledge will not be broken.

Cowardice is a trait attributed to Manobo and other people of Mindanao. It is true that they do not take inordinate risks. The favorite hour for attack on an enemy's house is dawn. They prefer to thrust a spear through the floor rather than to call the enemy out to fight a hand-to-hand battle. In other cases they prefer to ambush him on the trail, five or ten men against one. Again, it may be more convenient to pick off a lone woman in a *camote* patch. Such are recognized methods of warfare. Once aroused, however, the Manobo will fight, and fight to a finish. Throughout the Jesuit letters we find mentioned various instances of really brave deeds on the part of the Manobo. In some cases the husband killed his family and then himself rather than fall into the hands of the Spanish troops. I have been informed of hundreds of instances in which the male members of the attacked party threw themselves against superior numbers in order that their wives might escape. Hand-to-hand encounters are not uncommon, if I may believe the endless stories that have been narrated to me by warriors throughout eastern Mindanao.

Laziness and dilatoriness can certainly be predicated of Manobo men, but such qualities are to be attributed to lack of incentive to work and to hurry. All the household duties fall by custom upon the shoulders of the women, so that there is little left for the men except to fish, hunt, trap, trade, and fight. When the men set themselves to clearing the forest or to other manual tasks, it is surprising with what agility, skill, and perseverance they work, though such spells of labor are short-lived.

No one has ever uttered a written word against the Manobo sexual morality. It is true that sexual matters are discussed with

the greatest freedom, but the most venial breaches of morality are punished. The greatest modesty is observed in regard to the exposure of the private parts. Gazing at an undressed woman, for instance, at the bathing-place, results in a fine. Unseemly insinuations to a woman are visited with a similar punishment, but if such overtures go further, even death may be the penalty.

As to temperance and sobriety, the rule is to eat and drink all one can, hence the amount of food and drink consumed depends upon the supply. Sobriety is not a virtue. To lose one's equilibrium and sense is to do honor to the host and justice to his generosity.

Honesty is certainly a trait of the Manobo character. I do not mean to maintain that there is not occasional pilfering, especially in small things that are considered to be more or less communal in their nature, such as palm-wine while still flowing from the tree, but other kinds of property are perfectly safe. The rare violations of the rule of honesty are punished more or less severely according to the amount of property stolen and according to other considerations.

Though respect for another's property is decidedly the rule, yet it is surprising to note with what care everything is counted, tied up, or put away, and how marks of ownership are set up on all occasions. I think, however, that these precautions are due not so much to a fear of pilferers as to a feeling of the instability of conditions in a country that has always been subject to turmoil.

Honesty in the payment of debts is one of the most striking characteristics of these people. I have advanced merchandise on credit to people whom I had never met before and the whereabouts of whose houses I did not know except from their own information, and yet, six months or a year later, when I entered their region I had no difficulty in locating them nor collecting from them. So high is their feeling of obligation to pay a debt that even children are sometimes parted with in settlement, but this occurs in extreme cases only. Though debts are satisfied conscientiously, yet a certain amount of consideration is expected as to the time and other details of payment, except in some very urgent cases.

Honesty in other matters, as in the performance of formal agreements, is equally noticeable though I must say that the performance may not be as prompt in point of time as *we* would expect. But it must be remembered, in connection with this last point, that in making an agreement one is presumed to make allowance for a great many impediments, such as evil omens, that do not figure in our system of contracts. Another difference, which applies also to the matter of debt, is that the man who owes a debt must be reminded of his obligation and urged in a gentle way to the performance of it. It occurs in some rare instances that a debtor is under a definite contract as to the exact time for meeting his obligation. In these cases, the creditor may be more insistent upon payment. It is to the credit of the Manobo that he never disowns a debt nor runs away to avoid the payment thereof.

It has been said that the Manobo is ungrateful, but I do not think that his gratitude is so rare nor so transitory a virtue as is claimed by those who pretend to know him. It is true that he has no word to express thanks, but he expects the giver to make known his desires and ask for what he wants. This is the reason why he himself is such an inveterate begger. He receives you into his house, feeds you, considers you his friend, and proceeds to make you reciprocate by asking for everything he sees. If he is under any obligation to you, he expects you to ask in a similar manner. If you do not do it, he considers you either apathetic or rich, and hence no reciprocation is forthcoming. Among the Manobo no presents are made except of such trifles as have no value.

The Manobo feels that he is at perfect liberty to conceal his real thoughts and to give utterance to such distortions of truth as may not compromise him with others. The penalty for slander is so great that this fault is seldom committed. Hence to get the truth from a Manobo, it is useless as a rule, to question him singly or even in the presence of his friends alone. He must be brought face to face with those who hold an adverse opinion or belong to an opposite faction. If this can be done, in a more formal way, as for example, by having a number of principal men attend, it will be so much the easier to obtain the desired information.

Queries as to trails or the dwelling-places of neighboring Manobos are hardly ever answered truthfully and do more harm than good because they tend to arouse suspicions as to the questioner's motives. Such information is obtained more readily by cultivating the friendship of boys than by consulting the older folks. This tendency to disguise or to distort the truth, though it has its natural basis in a desire for self-protection, give the Manobo a reputation for lack of the straightforwardness and frankness that is so noticeable among the Mandayas even after very short acquaintance. This lack of frankness, coupled with a certain amount of natural shrewdness, makes the truth difficult to discover, unless the suggestion made before be carried out, or unless one is willing to wait till the truth leaks out in private conversation among the Manobo themselves.

One trait of the Manobo that seems hard to understand is love for long discussions. No matter how trifling the matter may be it always becomes the subject of an inordinately long conference even though there are no dissenting parties. Even in such trifles as getting a guide to take me, by well-known trails, to settlements of people with whom I was well acquainted, the inevitable discussion would always take place. A great number of people would assemble. The matter would be discussed at length by every one present without a single interruption, except such exclamations of assent as are continuously uttered whether the speaker's views are acceptable or not. It seems that these and more solemn discussions afford the speakers an opportunity to make themselves conspicuous or to display their judgment. I can divine no other reason for these conferences because, in many cases that I have known, the result of the discussion was a foregone conclusion from the beginning. Perhaps such discussions are for the purpose of "making no concessions" or if they must be made, of making them begrudgingly.

These conferences are as a rule rather noisy, for though one speaker at a time "has the floor," there are always a number of collateral discussions, that, joined to the invariable household sounds, produce somewhat of a din. Noise, in fact, is a general characteristic of Manobo life, so much so that at times one is

inclined to be alarmed at the loud yelling and other demonstrations of apparent excitement, even though the occasion for it all may be nothing more than the arrival in the settlement of a visitor with a dead monkey.

Harmony and domestic happiness are characteristic of the Manobo family. The Manobo is devoted to his wife, fond of his children, and attached to his relatives, more so than the Mangauangan, but much less so than the Bisaya or the Mandaya. He is dearly fond of social gatherings for besides the earthly comforts he gets out of them, they afford him an opportunity to display such wealth, rank, and possessions as he may possess. His invitations to neighbors serve to keep him high in their estimation and thereby gather around him a number of friends who will be of service in the hour of trouble. Of the Manobo, as of the other people of Mindanao, too much cannot be said of his hospitality. If he has once overcome his suspicions as to a stranger's motives, he takes him into his house and puts himself to infinite pains to feast him as best he knows how. In Manoboland, one who travels carries no provisions. He drops into the first house and when the meal hour arrives he sits down upon the floor and helps himself without any invitation. It is practically his own house, because for the time being he becomes one of the family. If there happens to be a feast, he partakes without any special invitation and when he is ready to go, he proceeds upon his journey, only to repeat the operation in the next house, for it is customary always to pay at least a short visit to every friendly house on or near the trail.

One of the mental traits that has perhaps done more than anything else to retard the Manobo in his progress towards a high plane of civilization is his firm adherence to traditional customs. All things must be done as his forefathers did them. Innovations of any kind may displease the deities, may disturb the present course of events, may produce future disturbances. "Let the river flow as it flowed—to the sea" is a refrain that I heard quoted on this subject by Manobo. "Fish that live in the sea do not live in the mountains" is another, and there are many others, all illustrating that conservatism that tends to keep the Manobo a Manobo and nothing else. He is Christianized but, after going through the

Christian ritual, he will probably invoke his pagan divinities. He takes on something new but does not relinquish the old. Hence the difficulty of inducing the Manobo to leave the district of his forefathers, and take up his abode in a new place amid unfamiliar spirits.

This feature of their character explains the inconstancy and fickleness exhibited by the Christianized Manobo at the beginning of their conversion. They were due to the call of the forest hailing them back to their old haunts. These characteristics will explain also a host of anomalies that are noticeable throughout the Manobo's life.

The first visit of a stranger to a primitive settlement may produce upon him a very unfavorable impression. He may find that the women and children have fled, so that he finds himself surrounded by men, all armed. This should not discourage him as it happens in many cases that the men are unable to keep the women from flight. The wearing of arms is as much a custom with Manobo as the wearing of a watch is with us. The bolo is his life and his livelihood. Were he not to wear it he would be branded as insane, and be looked upon as a defenseless person.

Upon first acquaintance the Manobo will ask a host of questions that tax the patience of the visitor if he ventures to answer them personally. These questions spring from a desire to learn the motive of the visit. People from the neighboring houses drop in at intervals just as soon as word reaches them of the new arrival, and may continue to do so until the time of the visitor's departure, thereby keeping the house crowded. The assembling of these people arises from a desire to see the visitor and to find out the object of his visit. They will proceed to ask him every imaginable question that may suggest itself and if an answer conveys information that has anything of the wonderful in it for them, it gives rise to a thousand and one other questions.

Another phase of the visit is the frank demand on the part of the primitive people for any object of the visitor which they may take a fancy to. They always understand, however, a quiet refusal, if it is accompanied by an appropriate reason.

It happens sometimes that the chief of the settlement will claim a fee for transgression upon his territory, but he will usually accept a small present in lieu thereof, or will forego any gift, if the matter is argued quietly and diplomatically. The Manobo resents harsh words, especially when used towards him in the presence of his nominal subjects. Personalities or threats in such cases often prove fatal.

It is not good etiquette to ask a Manobo his name, especially if he is a chief, until one has acquired somewhat of an acquaintance with him. The information must be secured from a third party and in a quiet way. Moreover, it is customary to address chiefs and other persons of distinction by the names of their corresponding titles. Thus a warrior-chief is addressed *bagani*, and not by his proper name.

It is needless to say that no familiarity should be taken with the person of another until acquaintance has been cultivated far enough to permit it. Thus touching another on the arm to call his attention to something may be resented and may result in an attempt to collect a fine.

The handling of arms requires a word. The lance must be stuck in the ground, head up, at the foot of the house ladder; or if it must be brought into the house, as at night, the owner must take care that it points at no one while being handled. If one desires to draw a bolo from beneath its sheath, he must draw it slowly, and if it is to be presented to another, the blade must be kept facing the owner's body and the handle presented to the other man. The same rule holds for the dagger.

It will be noticed that as a general rule the men in a Manobo settlement go armed and keep their hands on their weapons, especially during meal-time, at which time it is customary to eat with the left hand, the right hand being reserved for the use of the weapon in an emergency.

A LIST OF PETROGLYPHS IN BRITISH COLUMBIA¹

BY HARLAN I. SMITH

IT SEEMS desirable to place on record the following list of petroglyphs in British Columbia, which is complete so far as known to date. By petroglyph is meant in this connection sculpture in low relief situated on rock in situ or at least of rather large size. Regarding these petroglyphs a certain amount of information is on file in the Victoria Memorial Museum, Ottawa. The list is arranged geographically, from northwest to southeast.

Correctness of identification, both as to the object being a petroglyph and as to its location, is vouched for except in the case of data marked "(reported)," and most of those are probably correct. Frequently reports from several unbiased observers are received regarding a single site. Further data as to reported petroglyphs and additions to the list are desired for the file.

As the "Historic Objects Preservation Act," passed by the Province of British Columbia in 1925, applies to these petroglyphs it is appended to this list.

COAST

On boulder about a mile from Skidegate, Graham Island (Illustrated in Newcombe, Petroglyphs, 1907).

Three quarters of a mile east of Metlakatla.

East side of head of Kitselas Canon (Reported).

On Gold Creek (Reported).

Half mile from Skeena River, east side of head of Kitselas Canon (Reported).

Six feet above high tide on cliff, left side going up mouth of Salmon river, Pitt island, northern end of Grenville channel (Reported).

Under east end of store, Lowe inlet (Reported).

East arm of Mussel inlet, near Mathieson channel, north of Bella Bella (Reported).

North side of Myers pass, Princess Royal island (Reported).

On Trail, north side of Canyon of Dean river, about two miles

¹ Published by permission of the Acting Director, Victoria Memorial Museum, Ottawa, Canada.

- from Kimsquit Cannery (Photographic negative of one in Victoria Memorial Museum).
- North of beach, north of mouth of Swallow creek, Dean channel south of Kimsquit (Photographic negatives and tracings of all in Victoria Memorial Museum).
- North of mouth of Swallow creek, Dean channel south of Kimsquit (Plaster of Paris moulds of two and photographic negatives and tracings of all in Victoria Memorial Museum).
- On two boulders on beach, east side of mouth of Elcho (Alice) harbor, Dean channel (Plaster of Paris moulds of one and photographic negatives and tracings of both in Victoria Memorial Museum) (One figured in Smith, Alexander Mackenzie, 1924).
- West side of falls, two miles south of Bella Coola (Photographic negatives, Plaster of Paris moulds, and tracings, in Victoria Memorial Museum).
- West side of canyon, one mile south of Bella Coola river, about three miles above its mouth (Plaster of Paris moulds of some, tracings of all others, and photographic negatives of some, in Victoria Memorial Museum).
- Opposite mouth of Noosatsum river, Bella Coola valley (Plaster of Paris mould, photographic negatives and tracing, in Victoria Memorial Museum) (Reports probably of others near here).
- South side of mouth of Noeick river, South Bentinck arm (Photographic negatives and tracings in Victoria Memorial Museum) (Figured in Smith, Noeick, 1925).
- Near fishery boundary on Rocky point near mouth of Quaquinistis creek at head of bay on west side of south end of Return pass. (Five photographic prints in Victoria Memorial Museum) (Reported).
- On cliff on shore of Ellersley lake (Many reported by Indians) (Possibly confused with pictographs).
- On the shoreward face of jagged rock at the high water mark on Denny Island, four miles towards "Steamboat" (Gunboat?) pass from Bella Bella (Reported).
- West side Smith inlet, near Rivers inlet (Reported with red pictographs that are visible from passing steamer).

Cape Commerell (Reported).

Beach about three quarters of a mile west of Fort Rupert (Plaster of Paris mould? and photographic negative in American Museum of Natural History, New York) (Figure 4, Plate XXXI, Smith, *Album*, 1923).

Beach at Fort Rupert (Photographic negatives in United States National Museum or American Museum of Natural History, New York) (Plates 23, 25, Fig. 61 and Plates 24, 26 in Boas, *Social*, 1897, reproduced as Figs. 2, 3 and 4, Plate XXXI and Figs. 1 and 2, Plate XXXIII, respectively, in Smith, *Album*, 1923).

Beach at Alert Bay (Photographic negative in American Museum of Natural History, New York).

Port Neville (Reported).

Grey creek, seven and a half miles east of Loughborough inlet (Reported).

Cape Mudge (Reported).

Northern shore of Hornby island (Reported).

Yellow Island, Baynes sound, near Comox. (Plaster of Paris moulds in American Museum of Natural History, New York) (Casts of parts in Provincial Museum, Victoria) Illustrated in Newcombe, *Petroglyphs*, 1907. (Fig. 5, Plate XXXI, Smith, *Album*, 1923.)

Shore of eastern side, Great Central lake, three miles below the head. (Fig. 116, Smith, *Gulf of Georgia*, 1907. Slightly different from photograph of retouched petroglyph.) Photographic negative in Victoria Memorial Museum, also one by Fleming of Victoria, and unreliable illustrations from memory published in one or two English papers, probably the *London News*, also in the *Overland Monthly*.

Sproat lake (Fig. 161 with right figure inverted, Boas, *Felsenzeichnung*, 1891; Fig. 3, Mallery, *Picture*, 1893, Plate XXXII, Smith *Album*, 1923; and illustrated in Newcombe, *Petroglyphs*, 1907). (Photographic negative of part in Victoria Memorial Museum.)

Departure bay (Reported).

Beach of point extending south from Brechin Mine, Nanaimo (Photographic negatives, in Victoria Memorial Museum).

On property of Western Fuel Co., two miles south of Nanaimo. (Plaster of Paris moulds in American Museum of Natural History, New York. Duplicate of largest in Victoria Memorial Museum. Cast of largest in Provincial Museum, Victoria. Casts of four from A.M.N.H. moulds in Field Museum of Natural History, Chicago. Cast of part of largest in Museum of the Art, Historical, and Scientific Association, Vancouver.) (Photographic negative of largest in Victoria Memorial Museum. Photographic negatives in American Museum of Natural History, New York.) (Fig. 4, Plate XXXIII, Smith, *Album*, 1923, after Plate XI, and Fig. 2, Plate XII, Smith, *Gulf of Georgia*, 1907. Also illustrated, except left lower figure in American Museum Report, 1898; and Newcombe, *Petroglyphs*, 1907. Upper part also illustrated in Fig. 1, Plate XI, Smith, *Gulf of Georgia*, 1907, from cast in American Museum of Natural History) (Another figure illustrated in Fig. 3, Plate XXXIII, Smith, *Album*, 1923, and Fig. 117c, Smith, *Gulf of Georgia*, 1907.) (Another figure illustrated in Fig. 1, Plate XII, Smith, *Gulf of Georgia*, 1907.) (Other figures illustrated in Figs. 117 a and b, Smith, *Gulf of Georgia*, 1907.)

Jacks point, near Nanaimo (Reported).

Nanaimo river falls (Reported).

Close to Digman's wharf, south end of Gabriola island (Reported).

Squamish (Reported).

On boulder west side Helen point, Active pass, Mayne island (Reported).

Clooose, west coast Vancouver Island (Reported). (Possibly painted pictograph rather than relief.)

Aldridge point, Beecher bay, about fifteen miles west of Victoria. (Two illustrations in Smith, Aldridge, 1924.)

Saginaw lake, Butte inlet (Reported).

INTERIOR

Riverbank, Kispiox (Removed to Hospital grounds, Hazelton). (Photographic negative, plaster of Paris mould and tracing Victoria Memorial Museum.)

Road near Kispiox (Removed to C. V. Smith estate, Hazelton).

- (Photographic negative, plaster of Paris mould and tracing in Victoria Memorial Museum.)
- East side of Skeena river below Glen Vowell bridge (Reported). (Petroglyph in Victoria Memorial Museum obtained from an Indian may be part or all of this.)
- Hunting-ground of Duncan, an Indian of Prince George, at headwaters of Big Salmon river (Reported).
- Below Churn creek, Fraser river (Reported).
- Half way between Lone Cabin creek and Big bar, Fraser river (Reported as being moved to Vancouver).
- Leon creek, Fraser river (Reported).
- A quarter of a mile above the mouth of Fountain creek, east bank of Fraser river (Reported).
- On boulder, half a mile east of Lillooet. (Photographic negative in Victoria Memorial Museum.)
- Half a mile south of east end of Alexandria bridge on east side of Fraser river within fifteen miles of Yale (Reported 250 feet long).
- Seton lake (Reported. Doubtful).

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VICTORIA MEMORIAL MUSEUM,
OTTAWA, CANADA

Certified correct as passed Third Reading on 16th December, 1925.

C. K. COURTNEY, Law Clerk

HON. PROVINCIAL SECRETARY

BILL

No. 66)

(1925

An Act to Provide for the Preservation of Historic Objects

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:

Short title

Designation of
historic objects

1. This Act may be cited as the "Historic Objects Preservation Act."

2. The Lieutenant-Governor in Council may declare any primitive figure or legend cut in or painted upon rock, or any group of such figures or legends, or any structure, or any natural object existing within the Province to be a "historic object" within the meaning and scope of this Act, and may make provision for the erection and maintenance in the vicinity of such historic object of a notice referring to this Act, in such form as may be deemed advisable.

Preservation of
historic objects

3. Where a notice has been erected in the vicinity of any historic object pursuant to this Act, no person shall, except pursuant to a permit in writing of the Provincial Secretary first obtained, remove, deface, obliterate, alter, add to, or otherwise interfere with that historic object, or the notice so erected, nor shall any person cut, or carve, or write, or paint any figure, legend, or name in or upon any rock or material comprised in or appurtenant to that historic object.

Penalty

4. Every person violating any provision of section 3 shall be Penalty liable, on summary conviction, to a fine not exceeding five hundred dollars.

VICTORIA, B. C.:

Printed by CHARLES F. BANFIELD, Printer to the King's
Most Excellent Majesty

1925

A PICTOGRAPH ON THE LOWER SKEENA RIVER, BRITISH COLUMBIA

By HARLAN I. SMITH

A PICTOGRAPH, probably unique in being visible from passing railroad trains, may be seen about a mile and a half east of Tyee on the north side of the Skeena river in British Columbia.



FIG. 1. Pictograph near Tyee, B. C.

This place, which is illustrated in Fig. 1, is about twenty-eight miles from Prince Rupert, or, to be more exact, between the 91st and 92nd mile posts west of Pacific Station. It is opposite the fourth telegraph pole east of the 92nd mile post. The place is on the eastern side of a bay of the river which the railway crosses on a fill. The pictograph may be seen from the bridge in this fill,

¹ Published with permission of the acting director, Victoria Memorial Museum, Ottawa, Canada.

and from there eastward to the place where the railway makes a cut through the point of rock on which the pictograph is situated. At this place the telegraph wires cross the track. The pictograph is about 50 feet from the track and approximately level with it on a nearly vertical face of a granitic cliff. The rock slopes back about six inches in six feet and the pictograph is consequently exposed to the weather. (The bottom of the largest "copper," one of the figures in the pictograph, is 6 feet 10 inches above the horizontal rock at the base of the cliff.)

The pictograph faces westward or nearly parallel with the railroad. Consequently it can be seen from the west, that is, by looking ahead on the left when traveling east or by looking back on the right when going west.

On June 5, 1925, I discovered this pictograph from a passing train and three months later cut the small alder and spruce trees in front of it to allow of photographing all of it and to make it entirely visible from passing trains. Photographs and motion pictures were then taken and are now available in the photographic division of the Department of Mines, Ottawa, Canada.

The pictograph, which is illustrated in Fig. 1, is approximately twenty feet long and comprises eight figures. (To be exact it is 9 feet 3 inches from the lower left corner of the largest "copper" or second figure from the left to the lower right corner of the one at the right.) It represents six complete "coppers," the upper part of a seventh "copper," and a face resembling a human being's although it may possibly be that of a mythical character. The "coppers" are drawn in red, apparently the same shade as most other pictographs in British Columbia while the face is in brown or purplish brown, the only pictograph I recall of this color. The six "coppers" are in a row, the incomplete one being below the second of these from the left. The face is above and to the right of the "coppers."

In the case of each of the six "coppers" there is the usual horizontal line between the upper and lower part and the vertical line from this to the base, the latter line dividing the lower part of the "copper." In the upper part of the "copper" at the left no marks were noticed, but in the second there is a ring-like figure

with seven radiating lines on its upper outline. In the third and sixth "coppers" instead of this ring there is a horizontal line with five little lines nearly perpendicular to its upper edge. In the fourth "copper" only three lines could be discerned. There is a horizontal line also in the fragment of a "copper." These "copper" figures are characteristic of the North Pacific culture and the style of the painting of the face is found only in the art of this culture area. In the ears, the shading of the lines and the eccentricity of the figure are particularly characteristic.

This pictograph was probably made in honor of an individual or family and certainly has to do with great wealth as the representation of even one "copper" would refer to considerable wealth.

"Coppers" were represented in various ways on this coast. A board or form made of boards fastened together was shaped like a "copper" and this was sometimes both painted and carved. Paintings of "coppers" were made on leather and stone as well as on wood. Pieces of shell were cut to the proper form and carved, and "coppers" are also indicated by pecked figures of the same unique form made on rock surfaces.

The antiquity of this pictograph is unknown to us. A number of white people and a few Indians of the vicinity were consulted in regard to this but those who knew the pictograph said it had been made long ago and that they had no knowledge of who made it or what it meant. However, it is quite likely that there may be some Indian still living who knows when it was made and all about it. The knowledge of its meaning among Indians of this region is likely to be a family secret.

Its preservation as a provincial or national monument would seem well worth while, especially because it can be seen from the railway. It can also be visited from boats on the river.

There is another group of pictographs in a similar situation, a mile upstream from this one. It is a short distance below the site of Aberdeen, which was one of the oldest, if not the oldest, regular boat landing and the location of perhaps the first salmon cannery on the northern coast of British Columbia. To be more exact, these pictographs are on the more or less vertical, jagged, granitic cliffs, and on the fragments fallen from them, from near

the high tide line up to perhaps thirty feet above it, about fifty feet north of the Canadian National Railway track and plainly visible from a passing train. They are about opposite the fourth telegraph pole east or upstream from the 91st mile post, or about $2\frac{1}{2}$ miles east from Tyee. The telegraph wires again cross the track at this point. Some of the pictographs are protected from the weather by overhanging rock.

The pictures appeared to me to be in the same shade of red as most of the pictographs of British Columbia. They are crude and scattered. A number of motion picture stills were taken of them for the Victoria Memorial Museum. Among these red pictures are rows of dots, and two simple faces, but I was able to make little of them.

VICTORIA MEMORIAL MUSEUM,
OTTAWA, CANADA

DIFFUSIONISM WITH A DIFFERENCE

By S. H. HOOKE

(EDITOR'S NOTE. This contribution has been transmitted by Professor Elliot Smith as a fair exposition of his point of view.)

AN IRONIC observer might find food for amusement in the reflection that so trivial a thing as a word, a puff of breath, may have power to stir a generation or a people to frenzy, while the same potent word uttered a century later in the same market-place will cause no more than a vacant stare of non-comprehension.

In Constantinople, in the 4th century of this era, a wise man under the hands of his barber would be chary of uttering the potent word "*homoonsion*" lest an iota less or more should move the gentleman with the razor to untimely and regrettable action.

Today in anthropological circles the apparently harmless word "diffusion" has potency to call up spirits from the vasty deep of scientific consciousness. It may produce scornful laughter or apoplectic rage. Half a century hence it may be as dead as the magic word which had power to set the empire of Constantine by the ears.

Yet it only means "spread." Diseases spread; weeds spread; rumor, that lying jade, spreads; all bad things no doubt. But knowledge spreads; inventions spread; habits spread. The spreading of all these is a matter of daily observation and of historical record. The manner of spreading differs, and may be studied, controlled, stimulated or repressed.

But there are diffusionists and diffuisionists. A brief examination of two contrasted methods of dealing with the phenomena of distribution may yield further cause for ironic reflection.

Dr. Clark Wissler has recently brought out a book called *The Relation of Nature to Man in Aboriginal America*. The book has its own merits, which reviewers have already pointed out. But, to put the painful truth bluntly, Dr. Wissler is a diffusionist. We find him "in the very act." He inquires without fear of conse-

quences, although he jests about losing his union card, into the diffusion of all sorts of things, both in the sacred area of America, and in the less favored regions beyond. He inquires into the spread of things so varied as methods of arrow-release, mocassins, ritual dances, and blue eyes. He has clearly, and with his eyes open to the enormity of his offence, written himself down a *diffusionist*. But he wears his rue with a difference. There are operators on a larger scale. Where he is content to steal the spoons there are more dangerous criminals who would steal nothing less than the title-deeds to the property. With their methods we shall deal later.

It is a little unfortunate, perhaps, that Dr. Wissler should preface his study of diffusion-patterns by the rather ambiguous sentence:

There is an old saying that to progress in science one must be universally naive, or to state the case otherwise, nothing must be taken for granted.

This definition of naiveté as a state of general scepticism is curious, but at any rate Dr. Wissler's scepticism is not so thorough as he would have us believe. He begins by assuming the geographical isolation of the New World under primitive conditions. In his own words:

Under primitive conditions contact with the Old World population was restricted to the Alaska-Siberian connection, which would place man, once he reached the New World, in a position of isolation.

He goes on to describe the New World as

a world of naturalistic men who achieved what they did in splendid isolation.

This may be naive, but it is certainly not the attitude of scientific scepticism which the author lays down as his guiding principle. Moreover, it is an assumption which at the outset begs one of the largest questions of diffusion, the question of the origin of the Mayan, Peruvian and other cultures. The view that the source of these civilizations is to be found in an eastern movement of culture from the Old World through Indonesia and the Pacific Islands to the Americas may or may not be accepted, but it is certainly supported by too large a body of evidence to be ruled out without discussion by the assumption of the isolation of the New World save by the Alaskan route. This preliminary assumption

leads to the further assumption that the New World provides us with a heaven-sent opportunity for observing the development of civilization *ab ovo*.

If one looks deeply into the subject, he will see on every hand proof of the gradual political evolution of village units into federations and ultimately into military despotisms. Perhaps nowhere else in the world can this evolution be so easily followed, step by step, as in aboriginal America.

One is reminded of the jesting of Erasmus with Sir Thomas More. The latter had stoutly defended transubstantiation against the sceptical logic of Erasmus. When Erasmus left his host to return to Holland, More lent him a horse to take him to the ship. The horse was not returned and in reply to More's expostulations Erasmus sent the quatrain:

Of Christe's body you have to me declared the creed
Believe you have it and you have indeed.
Apply this doctrine to your missing steed,
Believe you have it, and you have indeed.

This is naiveté in diffusionism with a vengeance. The whole question of the elaborate civilization of the Maya and their successors, of the social structure which it exhibits, of the origin of warlike behavior, and many other difficult problems of diffusion, are begged by the simple expedient of assuming the cultural isolation of the New World.

We come next to Dr. Wissler's method of dealing with the phenomena of distribution. This involves a third assumption, but this time Dr. Wissler frankly announces his intention of making this assumption by way of the usual scientific method of hypothesis. The assumption in question consists in the assimilation of cultural distribution to geological stratification. Let us take Dr. Wissler's description of this hypothesis.

Let us assume that the distributions for human traits are found in patches and that these patches overlie each other as do strata, and then proceed with sample distributions, to demonstrate the truth or falsity of this assumption.

Further, we may assume that these stratigraphic relations between distributions are indicative of time relation, or that wide outlying distributions are criteria of age. According to this hypothesis it would follow that a distribution of narrow range may be suspected of being an innovation, whereas one of wide range would be of respectable age. These hypotheses also may be right or wrong, and so should be checked against data of known age, or be tried out to determine their consistency in the face of other facts.

Dr. Wissler is of course perfectly free to make any hypothesis which may seem to him to lead to a fuller insight into the nature of culture distributions. But analogy is an extremely dangerous ground upon which to base an hypothesis, especially when the matters compared differ so widely. There is, of course, no question concerning the extremely valuable results which archaeology has obtained from what may be called the stratigraphical method of excavation. But in this case we are dealing with the actual superimposition of successive layers, each representing a different stage of culture. Nothing resembling such a definite and concrete basis for the calculation of time relations can exist in dealing with even simple material distributions such as ceremonial axes or tubular-handled pots, far less when we come to such complex phenomena as a sun-dance or the myth of a dying God.

The fact is that Dr. Wissler's treatment of culture distribution is vitiated throughout by over-simplification. The spread of the infinitely various elements of any mode of community life sufficiently advanced to be called a culture cannot be reduced to a simple formula such as Dr. Wissler's. It is perfectly true that when once any given element in a culture complex has arrived at or originated in a particular locality, its subsequent spread may assume a radiating pattern capable of representation on a map as a series of concentric circles. But this specious aspect of simplicity conceals the really important problems left wholly untouched by Dr. Wissler's short way with diffusion.

A couple of illustrations taken from Dr. Wissler's "samples" will serve to make clear the issues raised. One of the first culture-traits selected for representation on a distribution map is the *ball-game* played in various ways with varying implements in different parts of the New World.

Dr. Wissler proceeds to plot out the distribution of different types of implement, and arrives at certain conclusions with regard to the relative age of the different types. But if we step out of Dr. Wissler's magic circle and escape from this artificial simplification we find ourselves faced with facts which lead us to the heart of the central problem of diffusion.

We find that the apparently insignificant ball-game is no isolated material culture-trait, but is a symbolic act forming part of a culture-complex whose distribution is world-wide. Even in the area selected by Dr. Wissler we find that the ball-game is connected with the social structure of the North American Indian, that it is enshrined in his mythology; it is played ceremoniously by his culture heroes, and is even found in his sky-world. But we go on to discover the ball-game on the monuments of ancient Egypt, among the Australians, the Polynesians, surviving in seasonal ceremonial games in medieval Europe and even to the present time. It is perfectly clear that we have to deal here with a problem far too intricate and widespread in its ramifications to be solved by Dr. Wissler's simple formula.

Let us examine one more of Dr. Wissler's samples of distribution. The most fully discussed example taken from the "social traits" is the Sun Dance. Dr. Wissler takes Dr. Spier's analysis of the Sun Dance into 82 component elements. He remarks in passing that "objectivity" of treatment is secured by giving equal weight to each element. He then tabulates the tribes possessing a Sun Dance according to the number of elements each exhibits, and finds that by geographical distribution the tribes furthest from the center occupied by the Arapaho exhibit the smallest number of elements. He next tabulates the elements according to their occurrence and finds that the elements which have the widest distribution are the most basic. It is true that the argument is obviously a circular one, but it does not seem easy for Dr. Wissler to avoid a circle.

Now whether we consider the Sun Dance as a whole, a seasonal ceremony connected with the summer buffalo hunt, or whether we examine its constituent elements separately, we find that the problem which faced us with regard to the ball-game as soon as we left the circle faces us here far more acutely. On the one hand we find that the Sun Dance is but one interesting example of a type of human behavior as widely distributed as the ball-game and ought not therefore to be artificially isolated from the great number of similar ceremonies when the question of distribution and its significance is discussed. We cannot obtain a true pattern

of its distribution, supposing such a thing is possible, by treating it in isolation. On the other hand, when we examine the elements of the dance we find that most, if not all of them, form parts of other ceremonies in other parts of the world. Some like the polo and the self-torture are familiar enough to all. Other less familiar elements are the white paint, which we find in the initiation dance of the Curetes, so brilliantly described by Miss Harrison. The drumming on the hide finds a parallel in the ancient Babylonian ritual of the *lilissu* drum covered with the hide of the sacred bull.

Space will not permit the study of further instances of Dr. Wissler's treatment of the spread of culture-traits, and we may proceed to summarize our conclusions concerning Dr. Wissler's methods and results.

First of all he had assumed the cultural isolation of the New World during the process of building up those cultures which archaeologists and anthropologists are now studying.

Secondly, he has carried his process of isolation still further by separating material traits such as stone axes, and social traits such as the Sun Dance, from the larger culture-complex of which they form a part and which extends over the whole of the Old World.

By this artificial isolation he produces an appearance of objectivity and simplicity of treatment, but in actual fact succeeds in sterilizing the whole treatment of distribution. His mechanical technique is too narrow and inadequate to yield any real light on the great problems of the growth of the main culture-systems of the world. His results have no light to give us on the remarkable resemblances between the culture systems of the New World and those of the Old, and especially on the problems of degradation and disappearance of culture-traits.

Dr. Wissler meets this last problem in his treatment of the Sun Dance and acknowledges that his concentric circles tell us nothing about it.

Dr. Wissler's short way with diffusion is not, however, the only way, and we shall now go on to contrast with his results the work of other modern anthropologists who have made use of the concept of diffusion and the valuable adjunct of distribution-maps.

As a point of departure for our contrast let us take Mr. Gordon Childe's summary of his method and results in the Epilogue to his brilliant book *The Dawn of European Civilization*. He says:

with the arrival of the bronze age invaders in Britain the process of *cultural diffusion* (italics are mine) to which the first foundations of Western civilization were due may be said to be complete. . . . The several stages of the transformation of the world of food-gatherers with which we began in Chapter I to this state of civilization are shown diagrammatically in Maps I-IV. On the last map the distribution of Irish gold-work, German halberds, Cypriote daggers, and amber beads illustrates some of the commercial trade-routes by which the regions of bronze age Europe were united. The same diagrams reveal the centres of higher life from which civilizing influence radiated. In the Aegean, Egyptian and Sumerian inspiration created a truly European civilization.

He also speaks a few lines further on of the "westward diffusion of East Mediterranean achievement."

Mr. Childe is not afraid of the word "diffusion," and it is instructive to compare his maps and their complex distribution-patterns with the artificial simplicity of Dr. Wissler's maps. This is diffusionism with a difference. The book indicates the exceedingly valuable results of the study of distribution of artifacts applied to the problems of the growth of European civilization.

But Mr. Childe's work deals only with a particular area, and does not include in his investigation the spread of ideas, theories, and institutions which are inseparably bound up with those artifacts whose distributions he depicts so admirably.

Mr. W. J. Perry in his book, *The Children of the Sun*, following the same method, the study of distributions, but including in his survey and in his most illuminating maps, not only artifacts but the institutional elements with which they are connected has done upon a world-scale what Mr. Childe has done for European civilization. The very largeness of the scale renders impossible the convincing minuteness of Mr. Childe's treatment. But Mr. Perry has built up a massive and cumulative argument for the world-wide diffusion of the same East Mediterranean influence that Mr. Childe has demonstrated for Europe. In his book, by the application of those same methods which Dr. Wissler has made

such inadequate use of, the outlines are presented to us of an orderly and intelligible plan exhibiting the parentage, lines of descent, and distribution, of a great cultural complex in which widely sundered customs, institutions and types of behavior are found to have their roots, and the explanation of their family resemblances. Within this plan there falls into the natural place the explanation of those phenomena of degradation and loss which more limited methods fail to explain.

Every one who has ever had occasion to attempt to hunt down some particular custom or ritual to its sources must have become painfully aware of the enormous and crushing mass of anthropological data that missionaries, explorers, civil servants, and scientists have slowly accumulated during many years. Many valuable and brilliant results have been achieved by applying to various groups of culture facts such psychological and sociological theories as are represented for instance by the *Année Sociologique*. But it is only within the last few years that, through the study of the history, motives and trend of culture-diffusion, the main outlines of the great process of the growth of civilization begin to stand out clearly.

There is no necessary incompatibility between the study of diffusion as exemplified in the work of Professor Elliot Smith, Mr. W. J. Perry, Mr. Childe, Mr. Hocart, and other scholars who are working on similar lines, and the application of psychological, sociological or functional theories to particular problems that arise everywhere in the vast field of anthropological studies.

Nevertheless, as Dr. Wissler recognizes, the very word "diffusion" has a sound of evil omen, and seems to have power to stir up a bitterness even more intense than the now almost extinct *odium theologicum*. It may be of interest therefore, in concluding, to draw a parallel from a field of studies not very remote from anthropological inquiry.

About forty years ago Westcott and Hort began to set forth the results of their life-long studies on the text of the New Testament. From the Lays of Erasmus onwards orthodox customs had regarded uncials and cursives as more or less of equal authority, regardless of their history and lineage. Sheer numerical pre-

ponderance was the decisive factor in determining the value of different readings. Upon this method the Textus Receptus, which was practically regarded as inspired, was based. Westcott and Hort applied to the vast mass of MSS, which the labors of many years had made available to scholars what may quite accurately be described as the historical method. They found the main lines of diffusion of the various types of MSS and established broadly the parentage of these types. The result was a revolution in textual criticism. The new method and its results were received with scornful laughter and hysterical rage. A witty opponent applied the W-H method to the text of "to be or not to be," and, relying on Codex B, produced "ToB OR NOT ToB" as the true text. The curse against those who should add to or remove from the sacred text was generally invoked. Today their results are the basis of the extraordinary progress that the textual criticism of the New Testament has achieved. Many of their conclusions have been corrected, but their method is the only accepted method of treatment today. It is also interesting to remark that a favorite objection was that Westcott and Hort were not genuine palaeographers, they had discovered and deciphered no MSS, they were second-hand workers, relying on the results of others.

The parallel is interesting in many ways for MSS are a particular type of artifacts, like clay-tablets and cylindrical seals, or even pictographic pebbles, and call for the application of similar methods of treatment. And it is in the application by the "diffusionists," as they are called, of the same methods which Westcott and Hort applied to the accumulation of New Testament texts, that has begun to bring order into the vast mass of social customs and traditions, presenting such baffling similarity in difference.

The question of the Egyptian origin of the main types of culture which have held sway in the course of centuries is not more germane to the question of the ultimate soundness of the method than was Westcott and Host's predilection for Codex B to the main outline of their historical treatment of MSS.

The real value of Codex B, a very great value, has long ago been settled, and its rank among the other great uncials assigned

to it, while the method, which led to Westcott and Hort to assign to it the value which they did in the light of the evidence available in their time, has been so completely vindicated that it is not now even a matter for discussion.

So fuller knowledge will ultimately bring clearer understanding of the precise relation of Egyptian to Cretan and Sumerian culture. But the value of the historical study of diffusion stands supported by too massive a weight of argument and achievement to be laughed out of existence. *Fas est et ab hoste doceri.*

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COAST AND HIGHLAND IN PREHISTORIC PERU

By A. L. KROEBER

A SECOND expedition to Peru in behalf of Field Museum of Natural History, undertaken in 1926 in association with W. Egbert Schenck, resulted both in the determination of certain specific facts and in the obtrusion of problems. One of these problems is that of the relation of Coast and Highland in the history of pre-Columbian culture in Peru, and is so fundamental that a review of its status seems desirable. Some of the specific determinations made by the expedition attach to this problem and will be summarized in the development of the argument. The full results of the expedition will be issued from Field Museum, by permission of whose Trustees the present discussion is published.

I

The foundations of scientific archaeology in Peru were laid by Max Uhle. As a result of his work at Tiahuanaco in the Bolivian highland,¹ he formulated the distinction between an Inca or more or less historic culture and a prehistoric, perhaps Aymara, or Tiahuanaco culture, as shown in style of monuments, sculpture, ceramics.

Subsequently, at Pachacamac, on the coast near Lima, he found² certain potteries and textiles showing a strong influence of this Tiahuanaco style; other objects, in which this same influence seemed to persist in some degree, although weakened and simplified, and to which he gave the name Epigonal, that is, "following upon" or "derived from" Tiahuanaco, with an implication of breaking down or decadence; further, cemeteries of objects characteristic of the coast, free from Tiahuanaco or Epigonal elements, in some cases showing a degree of Inca influence; and finally, graves which contained only Inca (Cuzco) or Incaized objects. These groups, on the basis of the previous Inca-Tia-

¹ Stübel and Uhle, *Die Ruinenstaette von Tiahuanaco*, Leipzig, 1892.

² Uhle, *Pachacamac*, Univ. Penn., 1903.

huanaco discrimination, yielded a stylistic seriation reasonably translatable into terms of time; and this time sequence Uhle was able to confirm by a stratification in the soil.³ This stratification was of graves and structures and therefore hardly as incisively conclusive as a pure refuse stratification of sufficient area, depth, and content. But refuse stratifications are either unusually rare in Peru or we have not yet learned the technique of finding them. Uhle's discovery of a grave stratification was therefore a valuable one, especially as it was the first stratification of any sort authentically reported from Peru. It should be mentioned however that Tiahuanaco and Epigonal objects occurred in the same graves—a fact which does not vitiate the separateness of the two styles as styles, but certainly makes them, at least for Pachacamac, contemporary in period. The facts are stated by Uhle in his monumental memoir⁴; but so incidentally, that they have been generally overlooked; and in subsequent publications he has treated of Tiahuanaco and Epigonal periods as well as styles.

This much however was clear: there existed on the coast at least three successive eras or phases of culture: Tiahuanaco related, local post-Tiahuanaco, and late Inca.

In his next expeditions, undertaken both on the northern and southern coast, Uhle pushed farther, to pre-Tiahuanaco. In this case direct stratificatory evidence was lacking, but the stylistic materials abundant. These are embodied in his Proto-Chimu and Proto-Nazca cultures, or Early Chimú and Nazca, as it seems better to call them, since "Proto" conveys the idea of "previous" rather than "early," of a rudiment which has not yet developed, whereas both Proto-Chimu and Proto-Nazca are cultures in the full flower of their particular tendencies.

On the northern coast, Uhle showed⁵ that one form of Chimú culture, characterized by prevailingly black pottery, typical of Chanchán, is associated in graves with Inca objects, and therefore Late; whereas another form, whose pottery is prevailingly colored or red, as at Moche, is never associated with objects that show

³ *Ibid.*, 19, also, *Am. Anthropol.*, n.s. 4: 753-759, 1902.

⁴ Pachacamac, 22.

⁵ *Die Ruinen von Moche*, *Journ. Soc. Amer. Paris*, n.s., 10: 95-117, 1913.

either Inca or Tiahuanacoid manner, and is therefore Early and presumably pre-Tiahuanaco. This last conclusion was strengthened by the discovery of one site at Early Chimu Moche containing burials of vessels with clear Tiahuanacoid relations but unassociated with either specifically Early or Late Chimu ware, and therefore presumably representing an influence intrusive between these two styles. This intrusive character was also suggested, even if not definitely proved, by the position of the Tiahuanacoid cemetery on part of an Early Chimu structure, the Pyramid of the Sun.

In the south, Uhle found in situ two cultures previously represented only by scattering objects and scarcely recognized by science: those of Ica and Nazca.⁶ Each occurs in some degree in both valleys, fortunately for interpretation, although the nomenclature upon which usage has settled reflects the local preponderances. The Nazca style is a highly developed and individualized one, as much so as Early Chimu, though in quite different directions, and quite as free from Tiahuanaco influence. The Ica style occurs in several different phases, aside from local variations. One of these shows a degree of Tiahuanacoid influences; another is free from these, with all the appearance of a well settled and conventionalized provincial style; the third shows a greater or less degree of Inca influence or admixture. So here again there was indication of the time sequence: pre-Tiahuanaco; Tiahuanaco; post-Tiahuanaco; and Inca.

Uhle next attacked the central coast, and at Cajamarquilla and Aramburú in the valley of Lima found wares and structures which he called Proto-Lima,⁷ though Early Lima is perhaps the better designation. A related style appeared at Chancay, dissociated physically from the Epigonal and the Late Black-and-White styles of that valley. These new styles showed certain Nazca resemblances, though not very close ones, on the basis of which Uhle derived them from Nazca and placed them temporally

⁶ *Journ. Soc. Amer. Paris*, n.s., 10: 341-367, 1913; *Intern. Congr. Amer.*, xiv, Stuttgart, 1904, 567-579 and 581-592, 1906; *Proc. Davenport Acad. Sciences*, 13: 1-16, 1914; *Univ. Calif. Publ. A.A.E.*, 21: 57-94 and 121-132, 1924.

⁷ *Frühkulturen in der Umgebung von Lima*, *Intern. Congr. Amer.*, xvi, Vienna, 1908, 347-370, 1910; *Univ. Calif. Publ. A.A.E.*, 21: 293-303, 1926.

near this and before Tiahuanaco. An association, especially at Cajamarquilla, with Tiahuanacoid objects, he explained as a tail-end contact of Proto-Lima with the first arrival of Tiahuanaco influences. However, his case for pre-Tiahuanaco is weaker for Early Lima than for Chimu and Nazca, because there seems to be at least as much Tiahuanaco and Epigonal as Nazca constituent in "Proto-Lima."

Elsewhere on the central coast, at Ancon and Supe, Uhle found settlements of rude-cultured fishermen, with incised ware in place of the painted ceramics usual in Peru.⁸ The collections were unmixed, and he therefore interpreted them as also pre-Tiahuanaco, in fact as being primitive in time as well as in manner, and suggested their temporal equation with earliest Nazca, the central coast having lagged behind both the south and the north in stylistic development. However, the collections are quite small and their dissociation from other Peruvian material too complete, so far as they present definite characteristics at all, to render their positive placing in relative or absolute time free from a speculative element. My present impression is that this crude material is about as early as Uhle believes; but a possibility must be admitted that its "primitiveness" is the result of the mode of life of a social group rather than of a period.

The same restriction probably applies also to crude material found by Uhle in the far south, about Arica, and in northern Chile, and interpreted by him as early⁹; but I am not personally familiar either with the region or the material.

Still later, Uhle went on to connect Peruvian styles and cultures with those of Ecuador, of Central America and Mexico,¹⁰ and finally even those of the United States,¹¹ in a broad but specific scheme. These views fall outside the scope of the present review. It is well to realize, however, that any weakness which may inhere in them does not necessarily reflect on Uhle's Peruvian interpretations. His Peruvian interpretations rest on stylistic

⁸ Frühkulturen; also, Intern. Congr. Amer., xviii, London, 1912, 22-45, 1913.

⁹ Bol. Soc. Ecuat. Estud. Hist., Quito, 3, 1919 (2nd edition, 1922).

¹⁰ For instance, *ibid.* (or Bol. Acad. Nac. Hist.) 4, no. 9, 1-6, 1922; 4, no. 10, 1-36, 1922; 7, no. 18, 1-33, 1923.

¹¹ Intern. Congr. Amer., xxi, ii, Göteborg, 1924, 673-698, 1925.

resemblances, indeed, but coupled with objective facts of association and non-association; his Pan-American ones, on stylistic resemblances alone, so that their subjective constituent is immensely greater.

With one exception, leaving aside fantastic interpretations resting only nominally on evidence, the Uhle scheme for Peru has been essentially accepted by other students. Joyce,¹² for instance, and Jijón y Caamaño¹³ largely follow it. Means¹⁴ has a scheme of his own, which, however, is that of Uhle with certain modifications, such as making the beginning of Early Chimu contemporaneous with Nazca, and distinguishing a Tiahuanaco I and II. The first of these points is non-integral to the scheme, since the available evidence as to the time relation of Early Chimu and Nazca is indirect, a matter of their association to other cultures and not to each other.¹⁵ As to the two Tiahuanaco styles, Means does not succeed in making their difference clear, because his I remains vague; and he certainly does not found the distinction in associational evidence. He does appear, nevertheless, to have touched an important point in this distinction, which will be reverted to shortly. Otherwise, however, his interpretation mainly rests on Uhle's. I must be ranged in the same class. For instance, I recently arranged the known pottery styles of Peru in the scheme: pre-Tiahuanaco; Tiahuanacoid; post-Tiahuanaco and pre-Inca; Inca.¹⁶ My departures from Uhle consisted largely of a lesser certainty as to the place of certain styles, and a doubt,

¹² South American Archaeology, London, 1912.

¹³ Puruha, Bol. Acad. Nac. Hist. Ecuador, 3: 1-60, 1922, 6: 32-66, 1923.

¹⁴ A Survey of Ancient Peruvian Art, Trans. Conn. Acad. Arts Sciences, 21: 315-324, 1917.

¹⁵ My inclination is to follow Uhle in seeing Nazca earlier for such reasons as these: Nazca uses only hand-made rounded adobes, Early Chimu rectangular form-made ones scarcely distinguishable from Late Chimu adobes. Nazca pottery is succeeded in its area by wares that contain few of its elements, and those all made over quite thoroughly. Early Chimu and Late Chimu however have many elements in common with only minor change, such as the predominant stirrup mouth. A large enough mass of such considerations all running the same way may make for a high probability. The essential point, however, is that they reflect merely opinion, however well founded—like that on the primitiveness of the Ancon-Supe fishing culture—and are therefore in a different domain from evidence such as a fact of association.

¹⁶ Univ. Calif. Publ. A.A.E., 21: 231, 1925.

expressed with Strong, that Epigonal is really subsequent to Tiahuanaco, but that rather it may be in part anterior to it.^{16a} In a recent letter, Uhle accepts this modification as one he has held for some time. It is thus clear that so far there have been no very important deviations from the interpretation of Peruvian culture development as gradually built up by Uhle.

The Uhle scheme possesses a number of important merits. First of all, it sees problems and attempts to solve them by evidence. This may seem as generic and pallid a virtue as honesty. But in the prevalent condition of the so-called archaeology of Peru, not only formerly but today, it is a distinction of a high order, and its consequence is that however much the Uhle results may in time be modified as a whole or in detail, they will always remain the foundation of our understanding of Peruvian culture development. Second, the scheme possesses a fundamental clarity of concept, even though this is often enough overlaid with an obscurity due to the struggle to present effectively a mass of evidence consisting largely of detail unfamiliar to others. Third, the interpretation proceeds step by step from the better to the less known, from historic Cuzco and the Incas to legendary Tiahuanaco, next to the filling of the gap between them, then to what came before. Fourth, while concerned throughout with styles, which may be criticizable as only subjectively defined when they pass beyond the obvious, it does deal wherever possible with the objective facts of their association. Finally, it rests primarily on the evidence of pottery because this is fullest, but supplements it with data on textiles, structures, carving, and head and burial form wherever possible.

The basic weakness of the Uhle scheme is in its limitation of knowledge. It gives an explanation of the relations of most of the coast cultures—all of the better known ones—and of the two highland cultures of Cuzco and Tiahuanaco. It leaves the remainder of the highland—two-thirds of Peru in population today and probably in antiquity—essentially out of account. In short, it is not an interpretation of the culture history of Peru. It is an

^{16a} Univ. Calif. Publ. A.A.E., 21: 118, 120, 1924.

interpretation of the ancient culture of the Peruvian coast, with two highland forms of culture used as markers to register the scale of what happened on the coast.

With the coast only partly explored and nine-tenths of the interior scientifically wholly unknown, any scheme of reconstruction of Peruvian culture development must be considerably one-sided and provisional.

There are of course reasons for this enormous deficiency. Transport, always a problem in Peru, is much more arduous and time-consuming in the highlands. An expedition limited in time can hope to accomplish twice the results on the coast. The whole tactics and technique of archaeology are different in the highland. Instead of artifact-laden cemeteries signalized by proximity to conspicuous huacas, there are graves scattered in mountain sides and valley, in small buildings or in caves or in the open. Except in caves, there is little hope of their containing textiles or perishable objects. Private and commercial collectors have made little progress in exploiting the highland, in spite of the national habit of huaqueroing and being aficionado, because exploitation is difficult. Uhle, after his Tiahuanaco study, made several attempts to work at interior points—Huamachuco, Huaitara, Cuzco—but with slender results. He might have done more had his work in the country not been cut off by circumstances beyond his control.

II

The credit of being the first to take into active account the great blank in our knowledge of the interior, and to correct it, belongs to Tello. Himself a highlander, he absorbed, from childhood on, impressions of native life, many of them persistences from pre-Spanish times, which he was able to put to archaeological use. He traveled widely over the country; and he conducted at least one careful expedition into the interior which is among the most important in Peruvian archaeology. Starting from Huarmey on the north central coast, he went up the river to Aija, crossed the Black Sierra into the Callejón de Huaylas of the upper Santa, the one longitudinal valley of Peru draining into the Pacific; then crossed the White Sierra, and from Chavín de Huántar, above

the Marañon, a site previously visited and cursorily described but never studied, brought back precious sculptures and data.

Tello's general scheme of interpretation, which is the one serious attempt not founded essentially on Uhle's, is based on the concept of a highland origin of Peruvian culture so far as Peru is concerned. This early form he calls Archaic Andean, which might be translated Early Highland,¹⁷ and tends to focus in the north, in the region of Chavín and the Callejón. As to how far it originated there or in regions north of Peru, he leaves open, being concerned with developments on Peruvian soil. This Early Highland culture spread over the whole Sierra and ultimately Coast, developing into higher forms first at Chavín, then in the Tiahuanaco, Nazca, Chimu, and other areas. The Epigonal culture as found on the Coast is only a later phase of the same Highland irradiation. At times this irradiation weakened and the local Coast cultures developed peculiarities of their own; but only to be reinfluenced by a last Highland influence, that which produced the Cuzco or Inca form, whose specific origins are not clear but may trace back to the forested Montaña east of the Sierra.

Two examples will illustrate the Tello point of view. The Nazca culture divides into two phases. These phases may have been recognized by Uhle but were first described by Tello.¹⁸ One, which he calls Pre-Nazca, is characterized in its pottery by elaborate flamboyant or distorted designs, recognized by Seler as conventionalized demons or deities,¹⁹ and explained by Tello as reductions of a feline deity more or less universally represented in the highlands from an early time—that of Chavín if not the "Archaic."²⁰ This style gave way to the proper Nazca, in which the same cat god was represented in more naturalistic manner. Nazca in turn was succeeded by Tiahuanaco and Inca, admittedly

¹⁷ Andean is open to the objection that for non-Peruvians the word refers to the mountain system from Colombia to Chile, and is habitually so used, in anthropology as well as geography and geology. Archaic, which in Spanish refers essentially to time, implies in English also a primitiveness of quality.

¹⁸ Los Antiguos Cementerios del Valle de Nazca, 2nd Pan-American Scientific Congr., Washington, 1915, 1: 283-291, 1917.

¹⁹ *Gesamm. Abh.*, 4. 169-338, 1923.

²⁰ *Wira-Kocha, Inca*, 1: 93-320, 583-606, 1923 (especially 583-590).

coming from the interior. The Ica (or Chincha) style is recognized as only a local variant of Tiahuanaco and Inca. Some of its phases again contain the cat god, who appears also at Tiahuanaco; others contain admixture with Inca objects or blends of the Ica and Cuzco styles.

On the northern coast, Tello recognizes Early and Late Chimu under the names of Mochica and Tallán (or Chimu). He makes them continuous instead of separating them by a Tiahuanacoid intrusion; but derives Early Chimu from Early Northern Highland and Chavín. The handled small-mouthed "dippers" of Early Chimu have their prototype in similar forms, derived from gourds, in Early Highland. Certain stirrup-mouth vessels from the Early Chimu area are ornamented in relief in a style closely similar to that of the sculptures of Chavín. Tello was the first to recognize and describe the type and its Chavín resemblance, which is indubitable.²¹ Other Early Chimu vessels bear the figure of a crested animal or derivations from it. This animal—again the feline deity or related to it—is found in full development in sculptures and pottery painting of the area of the Callejón—the so-called Recuay ware. Early Chimu is therefore to be led back to an earlier Northern Highland source.

The Tello interpretation has its most immediate weakness in a lack of documentation by published data. Apart from special articles, his views are set forth in an *Introducción*²² and in *Wira-Kocha*.²³ The *Introducción*, a pamphlet, gives a synthetic view, clear almost to the point of being schematic, but, in the avowed preliminary nature of the sketch, without analysis of evidence. *Wira-Kocha*, an unfinished long article in "Inca," is more detailed, but its primary aim being an interpretation of mythology and symbolism, it can present its archaeology only piecemeal, without reference to itemization of associations in individual graves, and the like. These remarks are not strictures on Tello's intent or capacity. He had first a long up-hill battle to be able to pursue archaeology scientifically at all; and since then responsibility for

²¹ *Introducción a la Historia Antigua del Perú*, Lima, 1922: p. 27, pls. 8-12.

²² See footnote 21.

²³ See footnote 20.

a University department, an important journal, and for the new Museo de Arqueología Peruana, a national museum containing far and away the largest and most valuable collection of Peruvian antiquities ever assembled. There has been field work to do; and there has been little call from Peru or abroad for the tedious task of publishing technical data.

At the same time, whatever the causes, the lack of documentation is unfortunate, especially in view of the revolutionizing character of the scheme. Also, the scant statement tends to misunderstanding. Thus, Tello speaks of the Nazca area showing a "stratification" into Pre-Nazca, Nazca, and Tiahuanaco-Inca. Work on the spot by his side in 1926 revealed that stratification meant not a physical superposition but a typological segregation. In the same way, it remains unclear how far the distinction between the northern Early Highland and Chavín horizons is based on associations or on typology. In fact, it is largely the opportunity to discuss concrete material with Tello in the field, in museums, and in collections, during cooperative work for several months, that has impressed on me the strength of many of his contentions.

The following are some of the conclusions that he may be considered as having established or rendered probable, or which I have been led to adopt as revisions or amplifications of former views in consequence of his arguments.

Highland culture on the whole seems more stable and less subject to local variations than that of the Coast.

"Epigonal" is one widespread form of this generic Highland culture. The classic Tiahuanaco is a particular phase or local culmination, perhaps a relatively late one. Means' Tiahuanaco I may or may not represent another phase.

The Three-Color Geometric pottery style, Uhle's Red-White-Black recorded from Pachacamac, Ancón, Chancay, Chimbote, Moche,²⁴ all on the coast, is probably Highland derived.²⁵ Its fundamental design element, the rectangle or triangle containing

²⁴ Univ. Calif. Publ. A.A.E., 21: 272, n. 18, 1926; Field Museum Anthr. Mem., 2: 31, 1926.

²⁵ Means' Red-White-Black is or includes Recuay: *op. cit.*, 371.

a dash or dot, and its fundamental pattern arrangement, the step, seem Highland.

The Early Lima style, Uhle's Proto-Lima, contains a predominant Highland element. This applies as well to design as to modeling and fanciful forms. There is a Nazca constituent also, but it is minor.

Middle Supe²⁶ is largely Highland, only in part of the Epigonal or Tiahuanaco form. Even the Chimu strain in Middle Supe may have been received by way of the Highland or been modified by influences from it. Much the same applies to closely related Middle Ancón.²⁷

Of particular form elements, both the flaring, curled-out jar mouth and the longish tapering spout, are Highland. They do not seem specifically Epigonal. The Coast spout, both Early Chimu and Nazca, is tubular. Late Chimu shows all three forms, evidently due to the persistence of the Early Chimu cylindrical shape alongside the two incorporated Highland conical forms.

The double-spout with bridge has a Nazca form, in which the spouts are short, cylindrical, and parallel, and a second form with long, tapering, and spreading spouts. It has been usual to regard the latter as a northern development out of the earlier Nazca form. It seems much more likely to be a Highland form, which was intruded, along with cylindrical goblets, bird jars, and so-called Tiahuanaco designs, into the Coast cultures from Pachacamac to Supe, and became embodied in the north in Late Chimu. It is even occasionally found, with typical Highland treatment of design, at Nazca. Whether this Highland type or the true Nazca type of double-spout is the earlier, there seems no present means of deciding.

A small horizontal spout is common in Callejón (Recuay) and occurs at Nievería and Pachacamac. It appears to be a Highland device.

The bridge connecting two spouts, or a mouth and a figure, is very widespread and obviously early, as in Nazca double-spouts and Early Chimu double jars. It is highly characteristic of

²⁶ Univ. Calif. Publ. A.A.E., 21, pls. 71-78, 1925.

²⁷ Strong, *ibid.*, pls. 44-47, 1925.

Callejón ware, even crude pieces, in which figure and mouth stand so close that they could as well have been joined directly if strength were the desideratum, showing a very short bridge, which was evidently an ingrained stylistic habit. Whether, however, the Peruvian pottery bridge is always a derivative from this Northern Highland culture, can only be decided when we shall know more of the relations and age of that culture.

The three-legged bowl, never very abundant in Peru, seems most frequent in the crude "Archaic" of the Callejón area and in a cursively painted style known from scattering examples on the Chimu coast. The latter has been thought to derive from Ecuador or beyond. This may be true as regards ultimate origin, but the form perhaps penetrated the Chimu coast from its immediate Sierra hinterland. Sporadic occurrences elsewhere, as in Early Lima, at Pachacamac, and even in pure Cuzco Inca, may derive from the same or a common source.

A prominent foot on vessels, usually somewhat conical, seems to go back to Highland origin. This foot is lacking in Nazca and Ica-Chincha, occurs in Early Chimu but with a rather inconspicuous development, and is frequent in Late Chimu, usually in combination with tapering spout, double-spout, bridge, or other presumable Highland elements.

The quero-shaped goblet or tall unhandled cup has always been associated with "Tiahuanaco" culture, and is one of the few "Tiahuanaco" or Epigonal elements that actually occur with frequency in the pottery of Tiahuanaco and the Titicaca region. It is probably related in some way to the tall cylindrical vase characteristic of one of the forms of Nazca culture; but, as with the double-spout, there seems no present evidence to determine which of the two is the antecedent. The wide cylindrical goblet of Early Chancay²⁸ may also be related.

The interlocking fish pattern²⁹ appears in Early Chancay, Early Lima, the Nazca culture phase just referred to, and in forms decedent to it. In Nazca it appears out of nothing, and stands rather apart from the remainder of the style. This raises

²⁸ Same volume, 278-282, figs. 10-14, 1926

²⁹ *Ibid.*, 279-290, 1926.

the question whether it does not rather represent an injection into Nazca than an original element of this which was subsequently carried to Lima and Chancay, as Uhle argues. The doubt is the stronger in that it is nearly the only Nazca design element cited as having been carried north, and because Early Lima seems to contain a larger Highland than Nazca strain. On the other hand, presupposition would be against a fish pattern originating in the interior; and, as Uhle has advanced, this pattern is almost certainly a textile one transferred to pottery; so that its history remains far from clear.

A characteristic long noted of Recuay (Callejón) pottery is the assembling on one vessel of groups of small modeled figures rather crudely executed but done with some attention to detail. This is a trait not found in the Early Chimú collection of Uhle, the only one extant with data, and therefore the touchstone for the style. It does occur in certain pottery of general Early Chimú character which I have hypothetically separated, on stylistic grounds, as Middle Chimú. It occurs again on Chimú vessels (Cursive Modeled), of different form and texture, whose affiliations seem to be Late. These vessels are cursively painted in a manner similar to that of many of the three-legged bowls of the region, already referred to. These occurrences suggest a Highland origin for the small-group modeling, which later penetrated the Northern Coast, and became conserved in the eclectic Late Chimú style. This small-group modeling of the interior and the larger single-figure or head modeling of Early Chimú must be connected, especially as they occur in contiguous areas at a relatively early time. But what the influencing relation was within the connection is a problem that also needs further evidence.

Smoked blackware is so distinctive and easily observed that it is a convenient criterion for culture relations. I have recently tried to outline its history in Peru on the basis of a comparison of its occurrences.³⁰ The outline is probably sound for the Coast, but defective in that it covers only the Coast and Titicaca and Cuzco regions. The Northern Highland (Callejón) shows a considerable proportion of blackware, much of it very crude, but

³⁰ Same volume, 251-254, 1926.

apparently true bucchero. This may be the stimulus of the small percentage of blackware in Early Chimu, which becomes a prevalent proportion in Late: we cannot say more than "may." Tello has recently found blackware on the upper Cañete river. The Chincha (Ica) style at Chincha and Cañete and Pisco contains so strong a proportion of blackware as to raise a doubt whether this blackware can be the result of Late Chimu influencing. At Paracas near Pisco, Tello found blackware in two recently discovered new culture forms which show both Nazca and Chavín affinities. The Nazca style itself proves, on the basis of the excavations of 1926, to contain sporadic bucchero pieces, some with a graphitic surfacing or design occurring also at Paracas. It is evident that the story of blackware will have to be revised, with a larger part assigned in it to Highland occurrences.

The same may be said of pottery incising, though the evidence on this is too fragmentary and involved to make its discussion here profitable.

A minute trait, but of the sort of irrelevance that is often of value in determining connections and distinctions, is the facing of profile figures of men or animals to the right or left. No pottery style is uniformly consistent on this point; but nearly all show a leaning ranging from 2:1 to 4:1. Nazca, Recuay-Callejón, and Chavín designs on Early Chimu vessels normally face to the left; Early Chimu, Chincha-Ica, and all the "Epigonal" or similar Highland-influenced Coast wares, to the right; Late Chimu, in pressed relief, is about in balance. This shows a rather surprising opposition between Northern Highland and Northern Coast, and again between Central and Southern Highland and Southern Coast, with Northern Highland and Southern Coast going together. Ica, as might be expected, follows the Highland strain that entered into it; and Late Chimu is once more, as at so many other points, indifferently eclectic. The fuller significance of these results waits on amplification of data.

It is apparent from the foregoing enumeration that with all that remains unknown about the interior of Peru, we possess abundant indications that the influence of the Highland was greater than there has been allowed room for in the accepted

reconstructions; and that with fuller data the part of the Highland will grow rather than shrink. For this fundamental view and its substantiation at many points, credit is due primarily to Tello.

The danger in the point of view is that it can easily be carried farther than our exceedingly scant knowledge. If it is developed slowly, step by step, as information accumulates, it will greatly deepen insight into Peruvian prehistory. Carried beyond this, it may retain a certain plausibility, but will more and more extend into the realm of arbitrary opinion.

III

The following paragraphs will indicate certain probable limitations on the theory of Highland origins. These limitations can be set forth conveniently in a review of new archaeological work during the past two years, as carried on by Tello and myself, in part conjointly on behalf of the University of San Marcos and the Museum of Peruvian Archaeology and of Field Museum.

In the Nazca area Schenck and I explored for Field Museum during nearly three months. The greater part of the time Tello or one of his assistants was with the expedition. It will be recalled that in this region the culture of Nazca was followed by that of Ica-Chincha, the latter containing an Inca ingredient toward the end. There is no possibility of the two basic types being locally instead of temporally differentiated because both at Nazca and Ica their sites are again and again found interspersed, never aggregated in solid areas. The specific problem of sequence concerned the phases of Nazca and of Ica. On these, stratificatory evidence would have been most welcome, but could not be discovered. It is in general not easy to find in Peru, and the chances are particularly unfavorable in a region like Nazca which is without concentrated sites of habitation or large structures. Schenck did discover a very clear case of Ica refuse accumulated to a depth of a meter over an area of Nazca graves. While providing no essentially new major insight, this discovery is most opportune because it confirms by direct evidence what had been previously accepted on indirect alone; and it has a certain importance because it is probably the first stratification in Peru

into which there enters the element of a clear occupation refuse, as contrasted with debris fill or graveyard soil.

As to the varieties of Nazca culture, Gayton and I had made a segregation of a data-less but otherwise excellent collection on the basis of correspondence of shapes and designs. This yielded two principal phases or strains: A, corresponding very closely to Uhle's small but pure type collection with data from Ica (Ocucaje), and also, though with somewhat less inclusiveness, to Tello's "Nazca"; B, corresponding to Tello's "Pre-Nazca," with the addition of shapes and designs not mentioned by him but found in repeated association on the same vessels as his distinguishing criteria. A phase X was on the whole transitional between A and B; it seemed not only a mixture of A and B but a strain containing intermediate forms. Finally phase Y was a reduced B, with "Tiahuanacoid" elements added. On the basis of stylistic development—the only criterion available—the time order A-X-B-Y was predicted.³¹

This sequence was confirmed by the 1926 excavations to the following extent. A complete series of transitions was found from the purest B to Y and from this to a pure Highland (Epigonal) style; and in turn elements of the latter, such as a certain type of flat bowls, appeared with only minor change in the Ica style. This gave the developmental series B-Y-Epigonal-Ica; and as X intergrades with A and B, the full series A-X-B-Y-Epigonal-Ica-Inca; which it would be very difficult to construe as anything but a time series since the factor of local variability is ruled out by the repeated co-occurrence of the styles within the quite limited area of one valley.

The bearing of these results on the broader problem of Highland influence is this. The one indubitable and pure Highland style among these seven at Nazca, namely, Epigonal, comes at a place in the series where it enters into the formation of the Ica style and supplants the last Nazca style, perhaps having helped its disintegration. There is thus nothing in the record to show that the Nazca style as a larger culture movement is of Highland origin. How and where it originated, what the antecedents of Nazca A

³¹ Same series, 24: 1-46. 1927.

were, is something on which there is no evidence. We searched diligently for such a predecessor, but in vain. All that can be said at present is that Nazca A suddenly appears in Nazca and Ica valleys and is followed by such and such a development. There is no evidence one way or the other whether the predecessor of Nazca A flourished in Nazca, elsewhere on the Coast, or in the Highland. To choose between these alternatives in our present complete blank of knowledge would be arbitrary. The most that can be ventured is the probability that Nazca A being already a fairly well developed and definitely characterized style, it is more likely than not to have had at least some ancestral relative in its area.

For Nazca B we have one external clue. Characteristic of its design, as noted by Tello, is a multiplication of faces in series, with tentacle-like projections that curl on themselves at the tip. Now, as Joyce has pointed out,³² this is also a trait of the one "pre-Tello" monument from Chavín, the Raimondi monolith; and a connection is strongly indicated. From this it would follow that the Chavín culture rather than being prior to the Nazca culture as a whole and being one of its formative influences, was contemporary with one of its later phases.³³

This brings up the question whether it may have been Nazca that went into the making of Chavín, at least its N or Raimondi stone phase. There are facts that bear on this problem, though they are insufficiently conclusive. Nazca B is an outgrowth, in the main, of Nazca A and X. Its faces and tentacles therefore have a known antecedent on the spot; those of the Raimondi stone have not. On the other hand, the multiplication of faces seems to appear in B without precedent in A or X, and may therefore

³² South American Archaeology, 181.

³³ There is one qualification. The Raimondi stone differs to my mind stylistically from the Tello carvings from Chavín. These do not show either face series or tentacles. There may thus be two styles at Chavín, M and N, with superficial Maya and Nazca resemblances (Cf. Field Museum Anthr. Mem., 2, 37, 1926). If so, M may be the earlier, and one form of Chavín culture may thus be earlier than Nazca B, or even Nazca A. Tello is disinclined to separate the Raimondi stone stylistically from the other monuments of Chavín, so cannot advance this argument; but its possibility seems to deserve consideration. Uhle makes the same separation of Chavín styles in Bol. Acad. Nac. Hist. Ecuador, 1: 46. 1920

be an intrusion more or less assimilated by the style—like the interlocking fish pattern already mentioned. Also bearing on the question are occurrences, on Central and Southern Highland pottery, of unrepeatd tentacled designs which may be conventionalized faces or animals. These are closely similar to tentacled unit figures to which the repeated elaborate tentacled faces of Nazca B are reduced in Nazca Y. They occur in the Highland in Huancayo ware which I was able to see on the spot during the 1926 expedition; and in a lot in Field Museum rather dubiously attributed to Cuzco. The Huancayo pieces also bear definite Highland (Epigonal) designs, such as V-bars in column: the “Cuzco” lot has quite Nazcoid colors and texture. In short, Nazca B and Y, Huancayo, Nazca-like “Cuzco,” and Chavín N all contain certain common elements; and of them, Nazca B is the only one for which a direct predecessor is yet known.

These, I fear, rather technical and special considerations are adduced not because they suffice to solve the problem, nor even because the problem is one of primary importance, but rather as an illustration of the situation of Peruvian archaeology and the methods available to it. It is clear that ancient Peruvian culture was enough of a unit to make necessary its treatment broadly and as a whole. It is also clear that the interrelations of its parts were intricate. It is also evident that the fragmentary evidence in hand indicates in every way that enough further evidence can be secured to trace these internal interrelations, and the development of the whole body of the culture, with a relatively high degree of certainty, provided only the evidence is sufficiently analyzed and critically used. If the fragmentary evidence just discussed seem unduly subjective in that it reduces essentially to stylistic interpretations, the real difficulty is not in the stylistic interpretation as such. Style cannot be disregarded in archaeology: the distinction between a Palaeolithic and Neolithic, between a Chellean and Mousterian implement, is one of style. The difficulty in Peruvian archaeology of today is the lack of exploratory data which would give the stylistic criterion certainty and greater significance. We grope among our stylistic intuitions because the needed specific archaeological facts have not been

ascertained. Our "data" are still too largely objects torn from their context by huaqueros, passed on to collectors, and sometimes come to rest in museums.

The relation of the Ica style to the Epigonal is also typical. Ica carries on the heavy and heavily painted open bowls of Epigonal with relatively little change. But alongside them its graves and cemeteries contain a mass of thin ware, with acute angled bottoms, bevel lips, and textile patterns, which make up the bulk of what is recognized as the Ica style. To interpret this style as of Highland origin because it contains one clear Highland strain rather unassimilated to the rest, plus occasional animal designs which are highland, would be one-sided. On the other hand, there is nothing known to which we could point as its predecessor. All that can as yet be inferred is that the Ica style being reported only from a certain part of the Coast region, its distinctive characteristics are most likely to have developed there. That it is at least partly composite in origin is not exceptional, as we have seen. All Peruvian styles which we can sufficiently analyze prove to be composite. If Late Chimu has been spoken of as eclectic, it is only because it is especially so.

On Paracas peninsula near the mouth of Pisco valley, Tello explored in 1925 and 1926 Cerro Colorado and Cabeza Larga, two adjacent sites showing related but distinct cultures with many quite novel features. This is a discovery of the first importance. There is blackware, incised ware, a sort of cloisonné or inlaid ware, vessels of Nazca form but without Nazca design, other designs strongly suggestive of the Chavín style, fine textiles in pure Nazca manner (most of the best so-called Nazca embroideries in collections are probably from Paracas, according to Tello), and many objects wholly unknown before. On the whole, Cerro Colorado has the more numerous Chavín and Cabeza Larga the greater Nazca resemblances. Tello inclines to put at least one of the cultures, possibly both, before Nazca. The pottery forms seem rather to suggest Nazca B. Again there are a mass of traits which in our present knowledge are neither Nazca nor Chavín nor anything else, but peculiar to the locality.

In Cañete valley, I found in 1925 at Cerro del Oro a culture

quite distinct from the prevalent Late Chincha one of the area, and, as so often in Peru, new to science, although the cemeteries had been considerably exploited. Having previously reported briefly on this culture,³⁴ I shall not describe it here farther than to say that it contains a Nazcoid element, certain Ica resemblances, and features of its own, and is shown by stratigraphy as well as typology to be earlier than Chincha-Ica.

In the next coast valley to the north, Tello explored the site Malena, encountering intricate conditions. The structure is of Nazca-like hand-made adobes, and there are sherds of ware very close to Nazca, but no vessels or graves of Nazca style could be encountered in months of search. The mummies and textiles are relatively late in type; the pottery heavy, awkwardly formed, with very little design, and of an obvious Highland rather than Coast character. There have evidently been successive occupations of this interesting site.

My excavations in Lima and Chillon valleys in the same year have also been already outlined.³⁵ Their principal result is perhaps the stratigraphic confirmation of Uhle's determination of the horizon of Early Lima. I see with Tello a larger Highland constituent in this culture than does Uhle. But it clearly is a culture that has been remodeled and given its shape on or near the Coast. Its enormous pyramids of cubical hand-made adobes, for instance, can hardly be the product of an interior that constructed in stone and reared no pyramids.

IV

The Northern or Chimú Coast is a particularly intricate region, some six or eight stylistic strains being already recognizable in the pottery. I have recently attempted to dissect these out³⁶—perhaps too analytically for permanent findings—so shall not review the situation as a whole but mention only certain new or reenforced considerations acquired in a second and longer visit to the area in 1926.

³⁴ *Am. Anthr.*, n.s. 28: 331-351, 1926.

³⁵ *Ibid.*

³⁶ *Field Museum, Anthr. Mem.*, 2: 1-43, 1926.

Tello inclines to derive the Early Chimu (Mochica) culture from that of Chavín because of the occurrence on the Coast of certain vessels which may be described as essentially Early Chimu shapes modified or bearing ornament in the manner of the Chavín sculpture.³⁷ Also certain dipper-like vessels have analogues near Chavín in the Callejón, as already mentioned. There is at issue here a point of procedure as well as fact. If we knew of series of graves containing a half-formed Early Chimu style with a direct Chavín style admixture, we might justifiably consider these graves earlier and their ware to have been largely responsible for the development of the pure or classic Early Chimu. On the contrary, what we know of Chavín on the Coast is all in the nature of a very small admixture among typical Chimu. The Uhle collection, for instance, the only one with recorded grave associations, contains two pieces with indubitable Chavín decoration, and four more which lean the same way,³⁸ among six hundred pure Chimu ones; these pieces occur in four or five out of thirty-odd graves that were adjacent and evidently essentially contemporaneous. The way in which Chavín-ornamented vessels occur in other collections from the area—not in groups or lots, but scattered in a ratio of at most one in a hundred—indicates that Uhle's Moche find is not abnormal. To derive the ninety-nine percent of pure Early Chimu ware from the one percent of combination of Chimu shape with Chavín ornament, would be subjective. It would also after all not be an explanation, since it would leave the bulk of the style, including the predominant stirrup-mouths, unexplained. The case would be better if the stirrup-mouth occurred, even in a minor way, in the interior; but it does not.

As to the dippers, if it were clear from stratigraphy, associations, or other evidence that the crude ones from the Callejón were actually earlier than Early Chimu, or even than say the Recuay phase of the Northern Highland culture, there would be a case. All that we positively know as yet is that they are cruder; and most Highland ware is cruder than most Coast ware. I incline to believe that the Coast dipper is derived from the interior; but

³⁷ Cf. note 23.

³⁸ Field Museum, Anthr. Mem., 2: 38, figs. 3, 4.

on the stylistic ground that the horizontally projecting handle has analogues in the interior—the horizontal spout—and not in Chimu. This argument can yield no more than a subjectively conditioned probability; and it is this sort of reconstruction that we are trying to transcend. At that, in proportion as the argument holds, it makes the dipper an intrusion into an alien style; and again this style as a whole remains underived from the Highland—and unexplained.

It seems likely that other elements of Early Chimu will prove to have connections, in whichever direction of influence, with the Northern Highland, as further material comes in and is analyzed. The areas are too closely juxtaposed for expectation to run otherwise. But according to evidence now in hand, the Early Chimu style heaves into our view essentially as developed, as self-sufficient and rich, and as lacking in known antecedents, as the Nazca style. As to time, all that can yet be said is that the appearance of certain full-fledged Chavín ornaments in full-fledged Early Chimu makes it clear that the two styles overlapped in time if they were not substantially contemporary.

As to Late Chimu, we are beginning to see some light, and better defined problems beyond. In Virú, the valley next south of that of Trujillo—which latter until now has been the only one explored on the northern coast—I found a cemetery containing Late Chimu in association with Cursive, Three-color Geometric, Epigonal, and Tripod ware. The latter are all Highland styles or strains. Their association at this Virú site of Taitacaltin is intimate, designs of one strain appearing on forms characteristic of another. The associated Chimu ware is generically of Late type; but it is not the classical Late Chimu of Chanchan and of most collections, which comes with an admixture of Inca aryballoids. The stirrup-mouth is not preponderant; and on the other hand there are Highland forms like the tripod bowl executed in blackware. This means that the site represents an intrusion of Highland influences which mingled with a Chimu tradition which temporarily was retroceding, but which later regained strength sufficiently, on its own territory, to discard some and transform others of the Highland traits. Out of this absorption there grew

the typical Late Chimu style, which is so obviously full of elements lacking in Early Chimu and yet in the main a carrying on of the bent of Early Chimu. That is, on Chimu soil, the Chimu tradition remained the absorbing medium which chiefly determined the final stylistic product as a whole; but much of the content of this style came from the interior. The Virú site represents the moment of contact and fusion. Its remains agree closely with the scant ones that Uhle discovered at Moche, and explain why he found Three-color Geometric graves physically underlying classical Late Chimu burials.

There is thus evidence of at least two Andean irradiations into the northern Coastland. The earlier brought Chavín sculptural designs and forms like the dipper; the latter, Cursive designs and forms like the double-spout. Some of these imports passed away and some were permanently incorporated. But the main current of Chimu style flowed on, with say the stirrup-mouth as criterion. As regards its most salient and permanent characteristics, there is nothing as yet to show that this current derives from the Highland; but its Highland constituents, both early and late, can no longer be disregarded.

The reciprocal Coast influence on the interior can only be studied satisfactorily after we have more Highland material. It can hardly have been absent. The group figure modeling of Callejón (Recuay) may prove to be a made-over influence derived from Early Chimu. At least it would be strange if the high development of modeling on the Coast had not found some reflection in the Highland.

Early and Late Chimu are both found in the Santa, Virú, Trujillo, and Chicama valleys. But North of Chicama Early Chimu suddenly drops out—more completely even, according to surface indications on the spot, than museum collections would lead one to infer. From the Jequetepeque to the Leche valleys, which I visited, and apparently beyond to Piura, collections and cemetery remains are consistently "Late" Chimu, with only slight local modification from the Late Chimu of Trujillo. The first problem of this northernmost coast is to discover whether anything else exists; and if it cannot be encountered, to search

the immediate interior, about Cajamarca and north, for related material which by comparison will serve to decompose the northern Chimu into its historical constituents. Certain jars, including those which I have elsewhere designated as shapes FJ and RFJ,³⁹ look extremely Highland. They are fairly numerous in this northern Chimu area, absent or sporadic in southern Chimu. On the other hand, the stirrup-mouth seems relatively somewhat less abundant—though still frequent—in the north. Enough exact data of this order will give some insight into the development of the culture of the northernmost coast, which at present presents a timeless appearance.

The pyramid of the northern coast has narrow or no terraces, steeply inclined faces, a large top usually subdivided and serving as cemeteries, and a frontal or lateral inclined approach. To some extent these features appear in the Early Chimu Pyramid of the Sun at Moche, but they are more pronounced north of Chicama. Some of them, like the summit burials, are perhaps local traits; others, such as the ramps, suggest Mexico. Of course this may be also a local trait, with the Mexican resemblance a coincidence. But the fact that the three-legged bowls so characteristic of Mexico, Colombia, and Ecuador, are found in Peru, as distinctive element of a style, only in the north, makes it clear that we are in this region at a point where connections even with Mexico cannot be offhand ruled out of consideration as vague and superficial.

Metal, to judge both from collections and from cemetery debris, was more abundant on the northern than on the central and southern coast, even in the late periods of the latter. This fact tends to confirm the northern center of metallurgical development more or less independent of the bronze inventing center of the Titicaca area, as Nordenskiöld,⁴⁰ Jijón y Caamaño,⁴¹ and Rivet⁴² have suggested. Whether this north coast development is to be connected first with Colombia and secondarily with

³⁹ *Ibid.*, 27, 28.

⁴⁰ *Comparative Ethnographical Studies: 4, The Copper and Bronze Ages in South America*, Göteborg, 1921.

⁴¹ Tincullpas, *Bol. Acad. Nac. Hist. Ecuador*, 1: 40-43, fig. 1a, 1920.

⁴² *Journ. Soc. Amér. Paris*, 13: 261-277, 1921; *L'Anthropologie*, 33: 63-85, 1923.

Mexico, as Arsendaux and Rivet see it (though they make the second radiation late and from south to north); or with the interior hinterland; or whether it is essentially local, is an important and no doubt soluble problem.

Burials seem mostly to be extended on the whole northern coast—an unusual position in Peru: Early Lima is the one other definite example, other than post-Conquest graves. Skull series with Early Chimu associations usually run a mixture of natural long and fronto-occipitally deformed broad-headed individuals. Hrdlička had observed this mixture in Chicama⁴³; though it is almost certainly Early, on the basis of the cultural associations recorded by him, not Late as he believed. On the other hand, it is possible that the instability of habit as regards deformation may have continued into Late Chimu times: I have seen little Late skeletal material, and in the stretch north of Chicama it would probably have to be obtained by excavation, as it is generally wholly wanting from collections and the surface. The explanation that most readily comes to mind for the mixture or fluctuation of habit within one population is that of a meeting of Highland and Coast customs. But again we need some data from the Highland, and more from the Coast, before we can do other than conjecture.

In the Virú-Trujillo-Chicama stretch Early and Late Chimu adobes are almost or wholly indistinguishable: form-made, rectangular, flat surfaced. Beyond to the north, they frequently show one variation: a rounded upper side. This feature recalls the hand-made round-contoured adobes always found with the Nazca and Nazcoid cultures of the south, but is puzzling. The rounding, imposed as it were on an essentially rectangular brick, somehow parallels the coexistence of long natural and short deformed skulls. Both may be the result of the survival of early traits in a marginal area—as the far-north Chimu coast obviously is to Peru as a whole—until their association with later traits. If such a process had been operative, it might explain why the pottery of the area is, or seems to date to be, so uniform and unsegregable into groups of obviously different age.

⁴³ Smithsonian Misc. Coll. 56, no. 16, 1-16, 1911.

These observations will suffice to show the range and importance of the problems which the north Coast offers, as well as the probability of the usual Coast-Highland relations having obtained in this area.

V

It remains to examine whether general considerations can at any point carry us farther than the special analyses that have been reviewed.

Except as to temperature, which is everywhere moderate for the latitude, the Peruvian Coast and Highland provide rather different environments for human cultures to crystallize in. Theoretically this fact might throw light on the relative antiquity or cultural dominance of the two regions.

The coast consists of fifty or sixty short transverse stream valleys, all except the longitudinal Callejón heading in the first chain of the Andes. They come at fairly regular distances apart, averaging twenty to twenty-five miles from stream mouth to stream mouth. A few are confluent; some separated by mountain spurs; most, by pampas or tabladas of low or somewhat elevated and unreclaimable desert. Most of the valleys, so far as their habitable portion is concerned, broaden only shortly before meeting the ocean, so that their general shape is triangular, ranging from acute to obtuse. Much the greater area of most valleys lies under 200 m. altitude, but the upper narrow portion sometimes continues to about 1000 m. Below this level there is practically no rain, only seasonal fog. The rivers usually run rapidly to their mouths, sometimes above adjacent parts of the plain; the ground is level except for a just perceptible seaward slope; and large scale irrigation is therefore practicable without difficulties. The ground is mostly fertile; the climate extraordinarily equable and mild. The aggregate inhabited area of the coast is surprisingly small, but the population is and was rather dense.

Whether this Coast environment was favorable for the reception and development of culture, depends of course on the culture. A non-agricultural population would have found plenty in the sea, nothing but shrimps in the rivers, and poor and limited hunt-

ing in the narrow and scattered thickets of brush along the streams. An agricultural population with even the rudiments of irrigating ability would have found an unusually profitable and easy subsistence, leading probably to a rapid increase of numbers. An agricultural population with habits so channeled as to lack all impulse to irrigate—if there was such a population in America—might have passed the valley by as inhospitable desert.

Above 1000 meters, sometimes even sooner, the environment changes. The valleys become gorges with only patches of bottom. Agriculture begins to be practiced in narrow terraces, watered from springs or streams in the mountain-sides high enough to receive irregular rains. There is no room for a large population: modern towns and ancient ruins are small. This coast hinterland is reckoned as Coast today when Peru is divided into its three great zones of Costa, Sierra, and Montaña; but it is at least half Highland culturally, and clearly was so too in ancient times. Construction was of stone instead of adobe, buildings scattered, the pottery heavy, agriculture in terraces rather than fields. This transition zone, the Ceja de la Costa, extends to 2000 m. or more. In elevation it corresponds most nearly to the areas of Mexico and Central America in which culture largely flourished and is supposed to have attained much of its first development. But in Peru it is too narrow and confined ever to have been of prime importance.

From 2000 or so meters up to the highest habitable puna, lies the Sierra, the Highland. Its most important portions culturally of course were and are the inter-Andean valleys; but the upper seaward flank of the first Cordillera is included. This is the country of the llama and the potato, of most of the modern mines and probably the ancient ones too. It is and was the great core of the country, containing two-thirds of the inhabitants. To a non-agricultural population, or one attempting to farm without irrigation, it would have offered a much more tempting habitat than the coast; to an irrigating one, perhaps a less inviting one. Or, assuming new culture ingredients to have reached a population already resident, everything would depend on what culture this population had established, and what knocked at its door from

outside. The generally great elevation of the Highland would have been no obstacle to any but a tropically conditioned culture, because proximity to the equator nearly balances the effect of elevation in all but the higher basins and plateaus. Even a tropical culture could theoretically have seeped gradually up the great rivers as they flow deep between the chains or through them, until acclimated for a farther ascent.

It is evident that the purely geographic approach is insufficient to solve our problem. On the other hand, the difference between Coast and Highland is great enough to make the environments a definite element to be considered in the tracing of culture relations. If Peru is culturally but part of a greater Middle America, and if the higher civilization of this Middle America is indigenous and essentially of Highland origin, Coast cultures like Chimú and Nazca will have to be looked upon as local and secondary divergences. But there remain several large if's to be substantiated first. Exact analyses of Peruvian culture can hope to contribute to the more and more complete unraveling of the larger American problem, as much as to receive aid from it, especially at present.

Probably everything we yet know of the archaeology of Peru falls within the last two thousand years, perhaps less. This is a short period so far as "origins" are concerned. That a culture like that of Nazca, seemingly as old as any we know on the Coast, already uses wool and metal, both of them materials presumably first used in the culture of the Highland and continuing to be exported to the Coast, proves nothing as to the remainder of the culture. The evolution of a technique of pottery making and style of decoration so saturated and developed as that of Nazca, requires as much in the way of cultural antecedents as the possession of wool and metals; and where these antecedents flourished, is as yet a blank.

The fundamental obstacle to understanding in this and all related questions is sheer ignorance of fact. Tello, as the result of long familiarity and opportunities for a survey of material, estimates that 25,000 vessels of Nazca style are lodged in institutions and the larger private collections. Small collections and scattering pieces may bring the total up to 30,000. On the basis

of my field experience, I would compute that these specimens represent the sacking of at least 15,000 graves. The majority of objects in burials are either found broken or are discarded as unsalable. Two marketable "huacos" per grave opened seems as high an average as could be obtained. Against these 15,000 graves rifled without record of a datum, Tello and the Field Museum expedition jointly opened 150 in 1926. On this one percent of material depends the interpretation of the other ninety-nine. And the culture was known twenty-five years before the one percent was secured. For the Chimu area the proportion is lower; and for many parts of Peru it is nil. Assume similar conditions for study of the Palaeolithic and it is evident that early European prehistory would not yet be the stably founded edifice of innumerable integrated pieces of fact that goes so far to satisfy the world's desire to know. When institutions and individuals begin seriously to replace the buying of collections by investigations of what is in the soil—a more tedious and costly process—Peruvian archaeology will emerge from its maze of conjectures out of which as yet we can for the most part only glimpse flashes of probability. A very real appreciation is due Field Museum for its enlightened attitude on this point.

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RICE, A MALAGASY TRADITION

RECORDED BY RALPH LINTON¹

WE BELIEVE that Madagascar was the original home of rice. Although we know that our ancestors came to this island after a long voyage across the sea there is no story of their bringing it with them or of its having been introduced by strangers. Rice was known to the Kimo and Vazimba.² We have a saying "Aza mana totovarim-bazimba." "It accomplishes nothing to pound rice in the fashion of the Vazimba," for they pounded their rice clumsily, two people working together and striking their pestles into the mortar at the same time. Rice that grows poorly and among weeds, as though it were wild, is still called "rice of the Vazimba." According to the traditions of the ancestors rice was first found growing wild. The Vazimba gathered the seeds as they did those of other wild plants, crushed them, and roasted them in earthen pots. They found that rice was the best and most strengthening of all foods, and since then it has been the principal food of all the Malagasy. It is the treasure of Madagascar and we have a saying "Vary Andriaminitra," "Rice is a god." For this reason it was formerly forbidden to feed it to pigs or to sell it to foreigners unless it had first been cooked, so that they could not carry it away and plant it in other lands.

All the Malagasy call rice "vary," "seed of the water," but there are more than seventy kinds, each of which has its name. It is cultivated everywhere except in the high mountains and in a few places where the soil is too poor. The tribes of the east coast have a variety which they plant on hillsides. They cut and burn the brush and plant the seeds among the ashes one by one, making holes for them with a pointed stick. New brush must be allowed to grow between crops, and for this reason they have to move their

¹ Capt. Marshall Field Expedition to Madagascar. By permission of Field Museum of Natural History, Chicago.

² The Kimo, "rich people," and Vazimba, "dwellers in caves," are frequently mentioned in Hova traditions as the first inhabitants of the island. They were conquered and absorbed by the Hova, but their tombs are still held sacred.

villages every three or four years. They have another kind of rice which they plant in the heads of valleys, where small springs make the soil moist, and still another which they plant in the swamps. These give good crops in the hot lowlands but are not good on the high plateau.

Our ancestors knew more about rice growing than any of the other tribes. They understood all about soils, fertilizers, and the preparation of the fields. The best soil is clay with lime and a little sand. Pure clay is too hard and stays too wet, while if there is too much sand the rice will not bear well. Unless the field is new and rich in humus, or there is plenty of volcanic ash in the ground, fertilizer has to be used. The best is the half rotted straw from the cattle pits. Ashes from the fireplace must be spread on the seed beds and our ancestors also covered them with the sweepings from their dwellings. They kept the sheep and chickens in their houses, so these sweepings were good fertilizer. If nothing better can be gotten the fields are covered with green lily leaves which are dug in when the field is cultivated.

The seed beds are usually made on hillsides, one above the other. They are surrounded by little walls of earth which keep in the water and also serve as paths when the fields are flooded. The preparation of the beds takes a long time. First little canals are dug across them to dry them thoroughly. Then the earth is cut out in square clods, like bricks, and these are piled up to dry and air. When they are quite dry they are broken and mixed with manure and the beds are leveled and flooded ready for the planting. The fields are prepared in the same way, although the clods are not cut so carefully, and at the last cattle are driven back and forth over the flooded field to make the mud smooth and soft. The digging is done with a long heavy spade. His spade is a matter of pride to every farmer. The blade is polished and the handle is of valuable wood oiled and polished. A man will sometimes pay as much for his spade as he can earn in two weeks. An old spade that has been tried will bring more money in the market than a new one, for the foreigners' iron is not as good as our own.

Formerly rich people's fields were worked by their slaves. Poor people gathered together and worked all the fields belonging to

the family one after the other. The man whose fields were worked that day made a big feast for everybody in the evening. There was no hired labor as there is nowadays.

The seed for the first crop is sown in April or May, that for the second crop in September. The blooming of the *Ambiaty* is a signal for the planting of the second crop, but it stays in bloom about a week and families who could afford it would consult a diviner to find which day was most propitious. Rice will still sprout after several years, but it is best to use that from the last harvest. Ripe grains that are very dry are selected and stored in earthen jars. When planting time comes the seed rice is soaked in water for three days, until it sprouts, and is then sown broadcast on the flooded seed beds. Our ancestors never sewed the last handful of seed rice. They carried it home and put it in the northeast corner of the house, where the family charm was kept and the offerings to the ancestors were placed. The man who was carrying it had to go home by the shortest road and could not turn aside for anything. If he did the harvest would fail.

As soon as the seed has sprouted well the water is drawn off and the seed bed is covered with manure. A few days later the water is let in in the morning but drawn off at night. This is kept up for two or three weeks, after which the water is left on the bed until the young rice is ready for transplanting. This is women's work. They uproot the plants, tie them in bundles, and carry them to the fields, where they plant them again in the soft mud, pressing them in with their fingers.

The rice has many enemies. While it is still in the seed beds it is eaten by rats and mice if the beds are dry, and by wild ducks if they are wet. We build clay pillars at the corners of the seed beds, whitening them with earth and putting hats of dried banana bark on them. The birds think these are people and are frightened away. After the rice has been transplanted it may be choked by weeds, or its roots may be eaten away by an insect called *Fano*, or a swarm of locusts may descend upon it. The locusts are the worst of all and when the farmers see them coming they make big fires so that the fields are covered with smoke. In former times almost every village had a sorcerer who claimed to be able to keep

the locusts away. When a swarm was seen he went out of the village, usually climbing a hill, and stood there without saying anything. As long as he remained standing the locusts would not settle on the rice fields. Every one injured and insulted him, for this was part of the charm. The sorcerer's power over the locusts was inherited from his ancestors. The same sorcerer made charms against the hail. When the storm began he would go out naked except for a loin cloth. He carried a rice pestle with which he beat the wind and rain. Afterwards he leaned the pestle against the wall of the house, close to the southeast corner. He also carried a small round pebble, like a hailstone, in his mouth, and it was believed that in this way he kept the hail in his power. While the rice was growing it was forbidden for the people to eat peanuts or to burn green plants at the fire in the house. If locusts came or hail fell the sorcerers would claim that it was because these rules had been broken.

When the rice is ripe its leaves turn yellow and its head bend toward the ground. When it is just beginning to ripen it is said to "*mampandainga zaza*," that is, "to make the children lie to their parents." The children see that it is turning yellow and run home shouting that it is ripe and ready to cut. When the sun is high it is hard for any one to tell whether the rice is really ripe. To be quite sure one must look at the fields early in the morning just at sunset. The men reap the grain with straight knives that have teeth along the edge, like saws. The women and children tie it into sheaves and carry it to the threshing floor. There it is left lying in the sun for a week or more, until it is quite dry. There is a threshing floor in every village. It is a level place with a hard clay floor and a low clay wall around it. In the center there is a low stone pillar. When the rice is dry a man takes the sheaves one by one and beats them against the stone so that the grains fall out of the head. Sometimes several men work at this, but then there is always danger of their striking each other in the face. In the Tanala country five or six men thresh at once and we have a saying that when you see three Tanala together one of them is sure to be a one-eyed man. The women gather the grain and chaff

in baskets which they hold above their heads and pour out slowly, so that the wind carries the chaff away.

When the rice has been threshed and winnowed it is stored in the granary. Our ancestors had four kinds of granaries. One sort was a little wooden house on posts. The posts were made very smooth and had broad wooden collars around them to keep out the rats. Another sort was built in the southeast corner of the house, like a square room. The only opening was a hole in the top and one climbed up to it with a ladder and then dropped down inside. Another kind was made of mud and stood fifteen or sixteen feet high. It was shaped like a beehive and there was a little door on one side just below the top. The commonest kind was a pit dug in the hard clay soil. It was small at the mouth but large enough below for a person to stand up and walk about in. Our ancestors sometimes put witches and other bad people in these pits and poured boiling water on them.

The rice is taken from the granary a little at a time, as it is needed. The women pound it in wooden mortars with long heavy pestles. After pounding it is winnowed. The first pounding takes off the husk and it is then red rice, the food of poor people. At the second pounding the red layer comes off, leaving it white, and that is what the rich eat. To make some dishes the grain is crushed to coarse meal. For breakfast we have Soso, whole rice boiled with a great deal of water. This is also given to sick people. For dinner we have Ampangoro, rice boiled until the water is all gone. We also make rice dumplings, doing up the meal in pieces of banana leaf and boiling it. We call these Betrosa, because one takes off the banana leaf before eating it, just as in old days a creditor would take away the cloths of a debtor who could not pay. When the dumplings are long they are called Fatinzaza, "body of an infant." The rice is also roasted and crushed. This is called Lango, and was the food of the ancestors. It is eaten at the harvest ceremony and is a good food to take on journeys. Poor people eat boiled greens with their rice while the rich have meat or fish. At a meal the wife always serves the rice and the husband the meat and gravy.

All parts of the rice are useful to us. There is little wood here

in Imerina and we use the chaff and broken straw for fuel. The better straw is used to bed the cattle and to thatch poor people's houses. When I was a young man straw could be gotten for almost nothing, but now people ask insane prices for it. The price of rice, too, rises every year. This may be good for the rich people and the rice merchants, but the lives of the poor are getting harder all the time. We Malagasy can not live without rice. We do not eat the foreigners' bread even when we can afford it, for it does not fill us up.

In the old days every family held a ceremony of thanksgiving when its rice had been gathered and stored. The following things were gathered for use in the ceremony: Three times three perfect heads of rice, a sprig of the Sodifana plant and another of the Tatamo plant, a little basket used for measuring rice, and some fish of the sort called Toho. The rice was an offering. The Sodifana plant will live even when uprooted and laid in the sun, and the Tatamo plant will come up time after time when you think it has been destroyed; together they symbolized the persistence of the family. The rice measure was a symbol of wealth and prosperity. The Toho fish symbolized continuation, for that is another meaning of its name. When all was ready the family gathered in the northeast corner of the house, which was the sacred place. It was sacred because the dead were always laid out there and their spirits lingered there even after the bodies had been buried. We used to believe that our ancestors were still alive and had great power. They were like gods to us.

The father of the family acted as priest. He put the heads of rice under the roof in the corner and prayed: "Oh Creator God, thou who hast made us and art the source of our existence, we present ourselves before thee to offer thee these chosen heads of rice. But thou are not alone, Creator God. Our ancestors are with thee and have also become Gods. This offering is for all of you." At the end of this prayer all the family cried "Hahasoa! Hahasatva! May this bring us good things and well being."

The wife had prepared some of the new rice in the form of Lango (roasted and crushed) and had boiled some of it with water. She had also boiled the Toho fish. The Lango was placed

before the family first and the father prayed: "Oh Creator God, we make this prayer about Lango, the first food of our ancestors, and thank thee before all. We pray that the first taste may bring us happiness and prosperity, well-being for the children and their parents during the day and the night, during the weeks, the months, and all the years that follow each other. May the earth provide us abundant food. May our ancestors also guard us." The whole family then cried "Hahasoa! Hahasatva!" as before. After this day they ate a little of the Lango, picking it up with their right hands, for it was forbidden to touch it with a spoon.

When the boiled rice and *toho* fish were brought, the father prayed again: "We are about to eat the rice cooked with water. The water is the source of our existence. Oh God who has made all and knows all, hear my prayers. I pray first with the *Sodifana* plant. Keep us from death and let us live with well-being and affection for a thousand years. I pray now with the *Tatamo* plant. Preserve our family. Do not let it be uprooted by jealousy or evil ways of life. I pray now with the rice measure. May our house be kept in good order and may no trouble approach us. Let wealth enter our home. I pray now with the *Toho*. It lives in the water that we drink and we will eat it with the first rice. Let our health and strength be continued." The whole family responded as before. It was forbidden to eat the new rice until this ceremony had been held.

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CIRCUMCISION RITES AMONG THE BAJOK¹

BY CLAIRE PARKER HOLDREDGE² AND KIMBALL YOUNG

IT IS now well recognized in cultural anthropology that material traits are much more rapidly altered by the incursion of a new (higher) culture than are the social and psychological traits. The latter often persist long after the former have quite disappeared. Thus, the *obeah* which the African imported into the West Indies continues, in spite of legal formulations against it, to this day. It remains a subtle but very real means of social control among the negroid folk of those regions.³ So, too, the negro brought many customs and magical rituals with him upon his importation into the United States. Some of these culture traits persist in the use of and belief in the witch doctor among our southern negroes. Psychopathologists have recently had the opportunity to observe the influence of this magical practice upon the mental processes of certain individuals. This has thrown light upon the mental mechanisms involved in that whole field of magic as it affects behavior.⁴

In Africa wherever the white man's culture has touched that of the native, the material traits of the former have tended rapidly to supersede the indigenous material traits. Among many of the Central African groups, as with the BaJok, the art of weaving has disappeared. So, likewise, the native working in metal is disintegrating, especially the art of primitive metal work particularly the traits connected with smelting. The native devices for securing

¹ This spelling is that used by A. C. Haddon, *Races of Man*, 1924, p. 52. Another spelling is that of *Batchokwe*, apparently the more common spelling of the white man of that region. F. Starr gives "Bachoko."

² The major author (H) spent the years 1923-25 in Angola, Portuguese Southwest Africa. The narrative of the rites themselves is drawn from his own observations and from information furnished him by natives and others. Where the information was acquired other than from personal observation a notation of the same is made.

³ Cf. U. G. Weatherly, "The West Indies as a Sociological Laboratory." *Am. J. Sociol.*, 1923: 29: 290-304.

⁴ A. B. Evarts, "Dementia Praecox in the Colored Race." *Psychoanalytic Review*, Oct. 1914: 1: 388-403.

food are giving way to the more convenient inventions of the white man. In the social organization, in the terms of relationship, in the persistence of fetishism, in the continuation of initiation rites, however, the older native culture remains but little altered by that of the intruder.

Occasionally there is a definite effort made to put a legal ban upon certain native customs which offend the white groups, just as in the West Indies efforts have long been made to suppress the *obeah*. Sometimes this external pressure has temporarily submerged the native customs, only to see its re-inception at an early opportunity. Thus, Kidd reports that although the Kafir gave up the rite of circumcision under the white man's influence, it was later reinstated.⁵ And Roscoe and Brown have furnished us with considerable information of the persistence of this ritual among the Bantu tribes.⁶

The present paper is concerned with reporting the rites of male circumcision, which serve as the ceremony to initiate the adolescent into adult age classes.

The BaJok inhabit a section west of the Kasai river lying between 6°30' and 9°15' South latitude and between 20°0' and 22°0' East longitude. The village in which this ceremony took place is located in the south-central part of this area, on a small tributary of the Chiombe river. The village is typical of that region. It consists of some ten poorly constructed grass huts arranged in a suggestion of a circle about sixty feet in diameter. The ceremony takes place in and near the village.

The circumcision ceremony is held for all male members of the tribe at or before the age of puberty. The more common age is that of puberty although for many of the lowest social class the rites are performed at a more tender age. Throughout, the women and children are kept in entire ignorance of what takes place during the ceremony. There appears in the village at the time of the call for the ceremony the so-called "Magish." He is imagined

⁵ D. Kidd, *The Essential Kafir*, 1904, p. 206f.

⁶ J. Roscoe, "Notes on the Bageshu." *J. Anth. Institute*, 1909: 39: 181-195. Cf. J. T. Brown: "Circumcision Rites of the Becwana Tribes," *ibid.*, 1921: 51: 419-427.

by the women, children and uninitiated to be a worker in magic. He is dressed in a knitted suit covering every part of his body in such a manner that not a vestige of skin or wisp of hair is to be seen. The suit terminates in and is attached to a very elaborate head-dress, including a mask of hideous nature. While he terrorizes the women and children, the initiated know all about him. His function, from what was said by the natives, consists in the instructions to the novices during the probation period following the ritual proper. The "Magish" does not appear to be any particular person, but anyone who might be asked to don the costume and assume the rôle. The boys, it would seem, are taught the "work" of the "Magish" during their initiation period.

The two boys for whom the ceremony was to be performed were brothers about twelve and fourteen years of age respectively. Both were about five feet five inches in height. Their weight was about one hundred and twenty pounds each. They showed good muscular development and were apparently in perfect health. Their skins were smooth and glossy and rather a deep bronze than black in color. They were mesocephalic. Their hair was scanty and woolly, eyes black, cheek-bones slightly prominent, noses platyrrhine, lips thick and chins short.

Since the grandfather of these boys was the village headman or chieftain, the whole family occupied a rather important social position. It was the father, however, who early in December 1924 informed the major writer of the forthcoming ceremony and, upon demand, permission was given to attend the same. The father explained that preparations were already underway for the ceremony (this was nearly a month before it took place). Notice of the date had been sent to all his friends and acquaintances far and near (perhaps members of his family class). Everyone in the village had been saving corn for weeks. Considerable quantities of honey were also stored away. From these alcoholic beverages would be made for the participants of the all-night dance that was to precede the ceremony.

People began to arrive three days before the date set and on the evening of the dance there were present at least one hundred and fifty persons of all ages and of both sexes. The guests were

expected to bring presents for the boys. These were kept by the father and given to the boys after the initiation was completed. As soon as the sun had set, the drums began to boom forth and the singing and dancing commenced. A visit was made to the village during the evening. While many of the men were in a condition of more or less intoxication there was no violence of any sort. The women and children did not drink. This included the two boys for whom the ceremony was held, since they were still children and would not become "men" until after the ceremony. The revelry continued throughout the night. The dancing was still going on as late as ten the next morning when the ritual proper was to begin.

The boys had been stripped of all articles of personal adornment. All hair had been shaved from their bodies, including the pubic hair. They wore only a short skirt, resembling a Hula dress, made of grass. Their bodies had been thoroughly covered with palm oil. Over their faces and bodies various designs had been painted with red and white clay.

A few yards from the village was an enclosure or corral about forty feet in diameter. It was constructed of scrubby upland trees. These had been stuck into the ground vertically and the branches intertwined so as to form a stockade some six feet in height. There were small openings on opposite sides of the enclosure. To one side, half the distance between the openings, a small hut had been built.

When the last dance was finished, several strong men hustled the two youngsters into this enclosure. With them went all the males in the village who had been circumcized. The subjects were stripped of their grass skirts. An old woman emerged from the hut just described. She carried water, some green leaves and a flour sifter. A mortar was produced in which she crushed the leaves. The mass was then placed in the sifter. The boys were required to stoop over until their backs were in a horizontal position whereupon the woman held the sifter over them and poured water over the crushed leaves, allowing it to run down upon the backs of each boy in turn.

Almost before anyone realized what was going on, the men in

charge had taken hold of the boys again, passed out of the enclosure at the opposite side from which they entered, and were hurrying them through the grass some yards away. The crowd of males followed in haste. The party passed over a low ridge until out of sight of the village, and then halted near a place where the grass had been cleared from a small space about ten feet in diameter.

Here each of the boys was seized by a strong man from behind. The man twined his legs firmly about the boy and also pinned his arms together behind his back. With this the man fell over on his back holding the boy thus securely on his torso. Other men held each boy's legs and arms from the sides so that neither of them was able to move or do more than to call lustily for his father and mother which each did when the operation began.

The men who performed the operations took up their positions squarely in front of their subjects and between their legs which had been spread apart by those who were holding them. There was thus one operator for each boy. The instrument used for the operation was a native-made hunting knife with a blade about three inches long. It had been thoroughly sharpened by whetting on a piece of stone. It had not been sterilized in any manner.

Pulling out the prepuce with his thumb and forefinger the operator severed it as close as possible to the point of the glans penis with one sharp flash of the knife. The remaining prepuce was then pulled back to its normal position. The remaining portion which was attached just behind the neck of the glans penis and which formed a sort of roll there was next split in the center on top of the glans penis and each half severed by cutting around to right and left respectively.

During the operation the father of the boys began searching the ground around each boy. He was gathering up the portions of the severed prepuce. When he had secured them, he withdrew a few feet from the group, inspected and counted the pieces. These he then rolled up together in a leaf and tied the package into one corner of his loin cloth. Upon being questioned about this matter, he replied that it was his duty to collect these pieces carefully, making sure that he had missed none. During the following night

he was to steal out and bury all somewhere in a secluded spot where no one would ever discover them. Should he not do this and anyone else thus later come into possession of the pieces, that person would then have great power over the boys to do as he wished with them. Such a person might make them ill, if he so desired. He might make them run away from their father. He might make them become demented. He might do any evil which struck his fancy.⁷

The operation finished, the boys were removed to the spot where the grass had been cleared and placed in a sitting position on the ground. A small stick about twelve inches long and three-eighths of an inch in diameter was split for three or four inches at one end and placed astride of the glans penis of each just behind the wound. The boys were required to hold the other end of the stick on a spot of clay placed at the end of the sternum. Some other boys who had, of course, gone through the ritual, approached with manioc flour which they sprinkled freely on the wounds which were bleeding rather profusely by this time. This manioc flour was applied until the bleeding ceased.

While the boys were being thus attended, the young men of the group brought grass and sticks with which they rapidly constructed a grass hut over the boys as they sat on the ground. At the same time the old men of the village including the father, grandfather, and the two men who had performed the operations, danced solo, to the accompaniment of the drums. Each of the two operators held in his hand, as he danced, the knives with which the operations had been performed.

When the older men had finished their dancing and the hut over the novices was completed, all the boys attending the ceremony but still quite immature were assembled. A place was chosen where two small trees about three inches in diameter stood about four feet apart. These trees were bent over toward each other and tied together in such a way as to form a sort of arch. Two loops of grass about eight inches across and linked together were suspended in the center of this arch. The drums were brought

⁷ We have here, of course, the native's protection of his offspring against evil magic. The BaJok call this power Bwanga or Wanga.

and placed a few feet to the rear. Several of the older men stood between the arch and the drums chewing green leaves of some sort. On the other side the boys who had been assembled danced two at a time. When one pair had finished, they approached the arch and presented, first their bellies, and then their backs to the loops of grass. Through these loops the men behind spat the juice of the leaves upon them. The pair then retired laughing to be replaced by two others. This was repeated until all the youths had danced. Apparently this ceremony was in the nature of a reminder of their own initiation period.

This completed the ceremonies for the day, so everyone departed. Those who lived nearby went to their homes. Those who resided farther away prepared to depart the next day. One or two men remained behind to guard and to look after the boys.

During their convalescence they were attended only by men. Women of the village prepared food for them but it was carried to them by men. No woman was allowed to approach the place and the novices were not allowed to approach the village where they might see or be seen by a woman. Strangers were also kept away. The morning following the circumcision they were awakened at dawn and made to dance for a short time. Each following day, so the information ran, they were required to do the same thing. The time during which they danced was lengthened from time to time until at last they danced most of the time from sunrise to sunset.

The day after the circumcision their instruction in adult tribal lore began. They were taught all the secrets of sex and many tribal matters which their elders considered they ought to know. They were to be allowed to return to the village only when their wounds had thoroughly healed and when they had learned perfectly all the lessons they had been taught. This probationary period extended from two to more often three or four months after the ritual. On occasions the class was large and some proved slow to learn. None of the class might return until all had learned their lessons. It was also said that the novices learned a new language during this period—a language which was understood only by the class of that particular year. They changed their

names at this time also, each individual taking for himself a new, and in his own opinion, a very beautiful name. His old name was never to be repeated by him and its use was discouraged in anyone else. To be called by his old name was equivalent to being called a child.

A visit was made to the boys three or four weeks after the ceremony. The wounds were doing well, considering the conditions under which the operation was performed. The swelling had nearly all disappeared, a healthy looking scab had formed, and there was little if any inflammation and no pus. The boys were cheerful and greeted their visitor with smiles. They were proud of their initiation and exposed their wounds without hesitation.

A small stockade had been built around the hut where the boys remained, similar to the one near the village. The grass was worn from the ground around the place and numerous improvised seats had been constructed near the entrance. Parts of the costume of the "Magish" were to be seen lying in front of the hut. A stick had been placed across the entrance to the enclosure about three feet from the ground and from it were suspended two linked loops of grass, like those mentioned in the ceremony for the youths who had already been initiated. These loops the boys were required to touch to their back whenever they passed through the entrance.

When their visitor (H) arrived, about seven-thirty in the morning, the boys were resting from a dance. They soon recommenced and went through a long and varied repertoire, singing all the while in voices that constantly cracked under the strain. They were still dressed in the grass skirts in which they appeared on the morning of the ritual.

At the end of about three months the information was sent out setting the date for the return of the boys to the village. What took place upon their return is from the narrative of the father.

Many people attended the dancing and revelry which marked this event, although neither the crowd nor the hilarity was quite like that seen at the first dancing. The dance commenced at sunset, however, and continued until nearly morning. During the early part of the evening the initiates gave a demonstration of dances and songs which they had learned during their probation.

They were then presented with the gifts the father had been keeping for them. Some time late in the evening each was approached by the father and told where a woman was waiting for him. Each went to his assigned woman who taught him the technique of sexual intercourse according to BaJok notions. The woman in each case was a friend of the father (probably in his marriage group) and she submitted herself as a matter of duty and not for the pleasure which she might derive from it. The BaJok women quite seriously declare, in fact, that they get no pleasure from intercourse with a novice.

The day following and thence forward these two boys were considered as men of the village. They built a house of their own in which they slept and they were privileged to marry if they so desired.⁸

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⁸ The women of the tribe are said to have their own circumcision rituals for young girls. These take place at the time of the first menstruation. Information was not forthcoming as to whether the clitoris is clipped off or not, but it is known that in certain Bantu tribes circumcision of women consists of this practice as well as making an incision into the labia minora. One of the writers (Y) has seen well-authenticated photographs of such a ceremony from East Africa. After the rituals, the women of the BaJok are also put through a probationary period to be followed by instruction in sexual intercourse by some man who is a friend of the father. The men report, as do the women cited above, that they derive no pleasure from the instruction. In the case of individuals of low caste, these final features of the initiation are usually omitted.

THE MOUND BUILDERS: WHENCE AND WHEN

By VERNON C. ALLISON

THAT explanation of an event or condition which best satisfies the available information in regard to it may be called a theory; it is a tool for the presentation of the evidence for and against in a coherent manner. Such a theory is here deliberately set up to account for as many of the known facts relating to the Mound Builders, as it is possible to bring into apparent agreement with one another; new data tomorrow might force a change in the arrangement.

A definite science deals with facts, and a fact may be defined as an occurrence or happening which, having happened once, may occur again if exactly the same conditions are re-established. Geology is not an exact science because of the time element involved; we see a certain geological process in operation today and see its results—erosion or sedimentation, for example. We also see apparently identical erosion or sedimentation results which we know, from their location, position, and surroundings, occurred long ago. The long intervening period of time, however, prevents us from being positive that the ancient erosion or sedimentation occurred under exactly the same conditions governing erosion and sedimentation today. All the evidence so far produced, however, indicates that the natural laws operated in the past in the identical manner in which they are operating today; there are certain major erosion and sedimentation cycles which have been operating for a vast period of time and the present is merely a definite part of one of these recurrent cycles. Thus geology utilizes a principle uniformitarianism or continuity. The principle of continuity will be applied in this paper to the problem of the Mound Builders.

The mound, built either of rocks of such a size that they can be carried by one man or built of earth carried in skins or baskets, was the first imposing enduring monument erected by primitive man; it required few tools; it is known the world over, of many sizes and uses, and for this reason it is not sufficiently definite to lend itself to the present task of attempting to identify the Mound

Builders. The simple mounds in the Mississippi basin are therefore disregarded.

The complex earthworks of Ohio were practically all built on high places adjacent to river bottom lands which, from the evidence yielded by the ancient village storage pits and refuse dumps, mainly grew maize or Indian corn. A great many of the large complex mounds group themselves in two classes. The first class has the following characteristics:

- (1) The walls are almost entirely of rock.
- (2) The walls are not thick.
- (3) The openings in the walls occur only at strategic points.
- (4) There are generally storage ponds or dug holes within the enclosure.
- (5) The ditch, if present, is inside the wall and may be discontinuous.

The ditch was used in both classes only rarely as a primary defense, only when the slope of the outside hillside was so gentle as to demand the additional protection of an exterior ditch. The inside ditch, in this class of enclosures, was merely a convenient place to get what little dirt may have been used to finish the rock wall, it saved the labor of carrying this dirt up from the river bottom—a distance of sometimes almost 500 feet.

- (6) There is little sign of village occupation within the enclosure.

(7) These are true forts or strong places. Examples: Spruce Hill Fort,¹ Ohio; Stone Fort,² Glenford, Ohio.

The second class of complex earthworks, also well exemplified in Ohio, are possessed of the following characteristics:

- (1) The walls are either constructed entirely of dirt or have only a rock reinforcement.

- (2) The walls are thick and massive.

(3) There are many openings in the walls and these openings apparently disregard strategic points and, from their location, could not have been used for entrance or egress.

- (4) There are generally water storage ponds within the enclosure.

(5) The ditch is always present and is inside except when disadvantageous slope makes an outside ditch necessary as additional protection to that offered by the wall.

- (6) There are many signs of village occupation within the enclosure.

(7) These are fortified villages. Examples: Fort Hill,³ Ohio; Fort Ancient,⁴ Ohio; and probably Miama Fort,⁵ Ohio; and Butler County Fort,⁶ Ohio.

¹ E. O. Randall, *The Masterpieces of the Ohio Mound Builder*. 1908, p. 18.

² Randall, p. 44.

³ Randall, p. 32.

⁴ Randall, pp. 77-82.

⁵ Randall, p. 54.

⁶ Randall, p. 63.

The interior ditch has caused considerable controversy among archaeologists who have worked in Ohio. Peck⁷ remarked,

But what people, savage, barbarous, civilized, or enlightened, ever constructed a fortification around five or six hundred acres, *with a ditch on the inside!* Or what military people made twenty or thirty such forts, within two or three miles. . . .

Fowke⁸ comments on this passage as follows,

If the author just cited had restrained his impatience to the extent of modifying the exaggerations in his second paragraph, and especially in regard to the last two sentences, his opinions would have more weight . . . as they deserve to do.

Further on, however, Fowke⁹ admits that the inner ditch must have handicapped instead of assisted the defender. Squier and Davis¹⁰ thought that the interior ditch indicated sacred works and the exterior ditch meant a defensive work. They¹¹ also observed that in the case of the larger enclosures, the

ditches, when they exist, are nearly always interior to circles or exterior to squares;

also, that the ditches are always interior, when there is one, in the case of the small, isolated, fairly regular, circles and squares. Major Long¹² offered various objections to the works about Piqua being defensive works. Morgan¹³ offered a suggestion which seems somewhat satisfactory to the present author. Morgan said that the Mound Builders built "long houses," similar to those of the Historical Iroquois, upon these embankments. These probably had no outside entrance; the entrance faced the center of the enclosure and was probably protected by a drawbridge across the inside ditch—the moat; the many unexplained gaps in the walls of the fortified villages were the divisions between the

⁷ J. M. Peck, *A Gazetteer of Illinois*, p. 35.

⁸ Gerard Fowke, *Archaeological History of Ohio*, 1902, p. 70.

⁹ Fowke, p. 153.

¹⁰ Squier and Davis, *Ancient Monuments of the Mississippi Valley*. Smithsonian Institution Reports, 1848, p. 54.

¹¹ Squier and Davis, p. 8.

¹² Major Stephen H. Long, *Expedition to the Source of St. Peter's River*, 1823, p. 50.

¹³ Lewis H. Morgan, *Ethnical Periods*, A.A.A.S., 1875, p. 206

"long houses"; each "long house" was occupied by a family or tribal group of some kind. Fowke¹⁴ objects to this view and insists that no clay was used for the outside coating of these "long houses," as assumed by Morgan, and that the embankments are made of loam and gravel, which possess too small an angle of repose to allow of much width at the top of the bank. In regard to Fowke's statement above, it is of interest here to give Wissler's comments on certain pits in the United States.¹⁵

Numerous depressions in the upper half of the Ohio Valley have been regarded as old house sites and recently Sterns located rectangular house pits in Nebraska, but, except in the last case, our knowledge is not definite, and the very perishable nature of the structures so far observed makes further discovery extremely difficult.

Again Wissler¹⁶ says,

It is true that a number of earthworks are designated as forts, but their use as such is largely hypothetical. Perhaps the best known example is Fort Ancient in Ohio, which is one of the most imposing earthworks in the world.

The smaller, isolated, geometrical earthworks scattered over the hill tops of Ohio may have been lookouts, shrines, signal stations, astronomical observatories, etc.; they are obviously not forts on account of distance from water, the menace of surrounding hill-tops and ravines, etc. (Fowke^{17, 18, 19}, and Short²⁰.) Wissler²¹ states

at the time of discovery the native villages in the southern half of the eastern maize area were circled by palisades. In the north the Iroquois possessed such fortified towns and even in New England they were known. It is now

¹⁴ Fowke, p. 158.

¹⁵ Clark Wissler, *The American Indian*, 1922, p. 110.

¹⁶ Wissler, p. 117.

¹⁷ Fowke, p. 154.

¹⁸ Fowke, p. 170.

¹⁹ Fowke, p. 220.

²⁰ John T. Short, *North Americans of Antiquity*, p. 52.

²¹ Wissler, p. 117.

²² Lewis H. Morgan, *Indian Migrations*, in "The Indian Miscellany" by W. W. Beach, pp. 203, 243-245.

²³ Frederick Starr, *A Shell Gorget from Mexico*, *Proc. Davenport Acad. Science*, p. 173; also *A.A.A.S. and Bul. Am. Geol. Soc.*

²⁴ Squier and Davis, p. 301.

²⁵ Morgan, *Periods*, p. 206.

considered that certain rings of earth in New York State mark the sites of palisaded villages, and there is reason to believe that similar redoubts in the Ohio Valley had a like origin.

The source of the Mound Builders has been thought, by many investigators, to lie to the south or southwest of Ohio. Morgan²² considered the Mound Builders as possible village Indians from New Mexico. Starr²³ says they were probably allied with Central American and Pueblo peoples. Squier and Davis²⁴ also suggest a connection with the higher cultures of the New World. Morgan²⁵ again says that the Mound people were the same as the Pueblo stock. Foster,²⁶ on the contrary, derived the Pueblo people from the Mound Builders. Fowke²⁷ disagrees with these views:

The theory of an offshoot or colony from the far southwest is even more untenable; for while it is possible that the above tribes (Cherokees and Mandans) may be descended from the Mound Builders, the Mound Builders themselves seem to have nothing in common with either the Aztecs or Pueblo Indians beyond a few small personal possessions which can easily be accounted for by the extensive traffic of aborigines. The theory would never have gained such strength had Morgan personally examined the Scioto valley enclosures before making his "restoration."

Wissler,²⁸ however, does not doubt an historical connection between the agricultural areas of Mexico and of the eastern United States. Speaking of mining and quarrying operations in the United States and Canada, Wissler²⁹ further says,

Practically all such operations were confined to the eastern maize area and the Pueblo habitat.

Read³⁰ writes:

The size of these enclosures seems to be related to the size of the arable land in the adjacent valley, and hence to the size of the village communities that could be supported from them. It seems to be a reasonable inference that these enclosures were strongholds, for protection and observation, and designed to meet the normal wants of small communities of agriculturists, and that they were not erected to meet the exigencies of a campaign. The great number of them, and the small size of each, scattered along the bluffs of a single stream, like the Cuyahoga, would tend to confirm this conclusion.

²² J. W. Foster, *Prehistoric Races of the United States*, pp. 98, 186-188.

²⁷ Fowke, pp. 470-471.

²⁸ Wissler, p. 12.

²⁹ Wissler, p. 128.

³⁰ M. C. Read, *Archaeology of Ohio (1886-1892?)*, p. 82.

There are two great apparent similarities between the Pueblo Indian and the Mound Builder: they both depended largely upon maize cultivation for their livelihood, and both lived in fortified high places overlooking their corn-fields; the Pueblo on his mesa, the Mound Builder upon his plateau highland, in Ohio. Their fortified villages consisted of a ring-shaped group of houses facing an inner court; these houses opened only to the inside of the court; in the case of the Pueblo, adobe construction permitted of thick, strong walls but in the more rainy country, Ohio, the earth construction was not so good, so that, as an additional precaution, a ditch was placed between the opening of the house and the inner court.

Wissler³¹, referring to mounds, says:

First the pyramidal mound for burial seems to extend from northern Mexico to the Isthmus and then to recur in Colombia, passing through Ecuador and down into the coast of Old Peru. At least in one part of the Inca domain we find buildings upon them. In fact, their general absence in Old Peru is accounted for by the rocky nature of the country, which affords sites of natural elevation to which buildings were frequently adjusted by terraces. It may be of interest to note that the pyramidal mound both for burial and building sites extends up into the Mississippi Valley as far as the famous Cahokia of Illinois, and that this distribution is continuous with the general mound area of the upper valley. In other words, the occurrence of mounds of this type has a generally continuous distribution from the Great Lakes of the North to the coast of Old Peru of the South. Throughout, they are most numerous in level districts.

Further:³²

Studies among the Pueblos of New Mexico have indicated that when we know more of that area we shall find a period of single detached adobe or stone rectangular houses preceding the composite pile of the modern pueblo. In fact, the Pueblo Indians of the present show a disposition to revert to the detached house, which does not differ materially from a single unit in the village structure. In like manner, we find in Peru a grouping of single house around a court so as to form a complete enclosure, and the ground plan of these is not essentially different from those of the preceding structures. Similar conditions have been reported from the Maya district.

Again:³³

In the Pueblo region the houses were so placed, either in cliff recesses, upon mesas, or piled upon each other in such a manner as to make other defensive works unnecessary.

³¹ Wissler, pp. 105-106.

³² Wissler, pp. 106-107.

³³ Wissler, p. 117.

The chief objection raised to the theory of a southwestern origin was that there was insufficient evidence of any connecting link between St. Louis and the southwest (Fowke³⁴). Since that time Thoburn^{35, 36} has found many traces in Oklahoma of a people who entered that State from the southwest, passed slowly across the State and left Oklahoma at the eastern edge. These people preceded the Caddoan who in turn preceded the modern Siouan, in Oklahoma. These early people built "long houses" and "ceremonial" mounds even as the historical people of the northeast (Iroquois), and had pottery crudely similar to Iroquois pottery. Here, then, is evidence of a people who passed from the far southwest, over the country of the Mound Builder, and were found, in a modified form, occupying the Mound Builder country when the white man arrived. Harrington^{36a} has found abundant evidence of a people who inhabited the shallow caverns and overhanging rock shelters of the Ozarks and who had eleven out of nineteen characteristics in common with modern Indians to the North and Northeast; these people, the "Ozark Bluff Dwellers," occupied these shelters long before the Mound Builders are thought to have lived in the Mississippi Valley; the date of the Bluff Dweller occupation was from 1226 B. C. to about 520 A. D. (Allison^{36b}). Here also are the traces of a people who antedated the Mound Builders, who, together with the village Indians of the southwest, were probably derived from a common parent stock—whose chief characteristic was maize culture. These people also apparently passed certain of their cultural characteristics along to tribes which occupied the northeastern part of the United States in historical times.

A people had been rapidly developing village life dependent upon maize culture. Maize was gradually developed from a grass whose nearest apparent ancestor, *theosinte*, grows best in upland

³⁴ Fowke, pp. 470-471.

³⁵ Joseph H. Thoburn, Curator Oklahoma State Archaeological Museum and Secretary Oklahoma State Historical Society.

³⁶ Vernon C. Allison and Vance Randolph, *The Prehistory of Crawford County, Kansas*.

^{36a} M. R. Harrington. *The Ozark Bluff Dwellers*, *American Anthropologist*, Vol. 26, No. 1, Jan.-March, 1924.

^{36b} Vernon C. Allison. *The Antiquity of the Deposits in Jacob's Cavern*. *Amer. Mus. Nat. Hist., Anthro. Series*, 26, pt. 4, 1926.

regions of not too warm a temperature. The origin of the maize growers is referred to the Valley of Mexico, which represents such a country. Maize enabled the maintenance of a much denser population; increased population led to organization, and this in turn to increased protection and power and opportunity for the development of more intricate handiwork. Thus the village Indians slowly spread against the opposition of the previously established but feebler hunting tribes which surrounded them; they carried their maize culture with them.

The gradual spreading of these people was suddenly interrupted by an adverse climatic change, which forced them to seek the shelter of cliffs and caverns on the eastern fringe of the northern front but made the present somewhat arid Southwest much more hospitable than today because of increased precipitation. These people on the eastern fringe were held more or less stagnant but those in the Southwest developed rapidly and became populous. Then another climatic change restored present climatic conditions. The return of semi-arid conditions to the Southwest forced the inhabitants of that region to attempt to forestall the aridity and failing food supply by developing irrigation; they were only partly successful and the lessened food supply forced a portion of them into marginal migration. The people who had been held in the shelters and caverns in the eastern fringe, the Ozarks, by the inclement climate, were freed by the return of the present day genial climatic conditions and left their shelters; probably continuing their original spreading movement in an outward direction from the Valley of Mexico, or, toward the northeast. Some one or more of these migrating peoples, with their maize culture, developed into the Mound Builders. They reached the Mississippi basin where they found the recent alluvial valleys very suitable for the raising of maize. In Ohio, where the river bottoms were narrow, they developed a somewhat modified "fortified village on the high place overlooking the low lying corn field" habitation. In the larger river bottoms, such as the Mississippi, where the bluffs were too far away from the maize fields, they built in the middle of the fields mounds large enough for a fortified village to be built upon their top.

When the Mound Builder people first entered the alluvial river bottoms, these were fairly recent and practically devoid of forests. A climatic interval^{37, 38} had just elapsed that was characterized, in the country roughly north of 35° N., by a cool, rainy period at first, followed by a cool, windy climate; this interval was marked by a greater moisture-fall in that part of the southwestern United States now semi-arid. During this period the part of the United States north of 35° N. could only support a scattered hunting population. The marauding activities of such people caused the village Indians to continue the already established custom of living in fortified high places overlooking their fields. The time of this whole cool interval was from 1226 B. C. to about 520 A. D.^{37, 38}.

The high water of the first part of this period had deposited the recent alluvial plains of the rivers in the Mississippi basin, and the cool, dry, windy weather of the second part of the interval had prevented much forest growth upon these alluvial plains. When the Mound Builders first reached them they were so lightly forested as to make good maize fields; the adjacent high lands, however, had sufficient forests to furnish the timber required in the construction of the "long houses" in their fortified villages.

The climate began to ameliorate about 520 A. D.; the temperature slowly rose and the moisture-fall slowly increased until the present climate developed. As the climatic conditions improved and the soil in the recent alluvial bottoms matured, the forests started encroaching upon the maize fields; a point was finally reached where the Mound Builders, with their crude tools, were unable to stay the advance of the trees and the forests captured the maize fields. The Mound Builders were then forced to abandon their agricultural life in this region. Part of them resorted to a more or less hunting life and as the country could only support a part of the population, as hunting people, that it could as an agricultural people, part of the Mound Builders may have

³⁷ Vernon C. Allison, *Climatic Pattern of Cenozoic Times*, Pan-American Geologist, vol. XLIII, April, 1925, pp. 205-216.

³⁸ Vernon C. Allison, *Quaternic and Tertiary Chronology*, Pan-American Geologist, vol. XLII, October, 1924, pp. 199-216.

migrated westward (Mandan?) and part southward (Cherokee?). The portion who stayed in the upper part of the Mississippi basin as modified hunting Indians still built or utilized the burial mounds; they no longer had extensive maize fields, so they no longer built the fortified villages upon the hill-tops; they did, however, retain their "long houses" (in a modified form), developed a kind of palisaded village and later became the historical Iroquois.

It is appropriate at this place to present the evidence upon the following points:

- (a) A recent climatic change;
- (b) its effect upon the river bottom land;
- (c) what became of the Mound Builders.

The climatic change is recorded in the growth rings of very old trees, the growth layers and shape of stalagmites that grew during this period in places exposed to the weather, and fossil fauna and flora.³⁹ The change was general over at least the Northern Hemisphere. The growth rings of trees consist of two layers; a red band, of uniform width for each tree and almost independent of the ordinary moisture-fall, representing the dry or non-growing season; a lighter band representing the wet or growing season and increasing in width with an increase in moisture-fall in the case of trees growing where the unusually large amount of moisture-fall for an unusually wet year can not be stored up for use in the following less wet years—trees with no impervious under-pan to interfere with good drainage. The Sequoias of the Pacific slopes are good examples. In regard to stalagmites, the moist, up-turned face of a growing stalagmite records the difference in color between the wet season with its air relatively free from dust or the ground water charged with much iron, and the dry, dusty season with little ground water and that fairly free of iron; also, the better the evaporation conditions, the smaller the diameter of a stalagmite growing under a given drip. Such stalagmites are found in Jacobs' Cavern,⁴⁰ near Pineville, in southwestern Missouri, and in Bear's

³⁹ Allison, *Climatic*, p. 206.

⁴⁰ Allison, *Quaternic*, p. 206.

Caverns, near Hillside, Pennsylvania. The fossil fauna and flora of Sweden also show this climatic change.⁴¹

Read⁴² discusses the effects of the advancing forests upon the the Mound Builder' maize fields as follows.

These old agriculturalists had their enemies against whom they were compelled to contend, the extension of the forests, the intrusion of wild beasts, and the aggressions of more warlike tribes. The extension of the forests is mentioned because it may have been one of the most efficient causes in the final expulsion of these people. Many attempts have been made to find causes for the existence of the treeless prairies of the West. A more natural inquiry would be, how came the other sections to be covered with forests? An herbaceous vegetation doubtless preceded the forests and has been slowly restricted by the growth of the latter. In the Southern States extensive regions which sustained only an herbaceous vegetation when first explored by the whites, are now covered with trees. Early agriculture attained its highest perfection in regions too arid for forest growth, where facilities were afforded for the artificial irrigation of the cultivated land, and was practically restricted to the treeless regions until better cutting tools than our mound builders possessed enabled the agriculturists to successfully contend with forest growth.

These alluvial plains, not long ago covered with water, would be the last to be encroached upon by the forest, and were probably treeless when first subjected to tillage. Land could not be cleared of forests, and its intrusion could with difficulty be resisted with such tool as have been described above [stone tools]. Crowded out by any causes from these regions, they could not transfer their agricultural operations to the treeless plains of the West, where the rank growth of grass would present so formidable obstacles and where countless herds of buffalo roamed. Certainly they sought the alluvial valleys, poorly adapted to the growth of grass, admirably adapted to the growth of Indian corn; they fortified adjacent bluffs, so selected as to command a view of the cultivated fields below, from whence they could observe the intrusion of man or beasts and make provision against the attacks of enemies from the table lands.

Further, Read⁴³ states,

Mr. Smucker has known the works for more than fifty-five years, and has hunted over them when covered with the primeval forests. He reports that they were covered with a mixed growth of walnut, sugar-maple, beech, oak, and wild cherry trees, some of which, when cut down, showed that they were over five hundred years old, which would indicate not less than one thousand to fifteen hundred years since the commencement of the intrusion of the forests (there is a burr oak, four feet and four inches in diameter four

⁴¹ Allison, Quaternic, p. 212.

⁴² Read, pp. 81-82.

⁴³ Read, pp. 84-86.

feet above the uphill ground surface, about half way up the middle of the North side of Monk's Mound, near St. Louis, at the present time; a movement is now in progress to count the growth rings of this tree by removing a small radial core and thus not injuring the tree). It is believed that General Harrison first called attention to the fact, in regard to similar works, that a mixed forest indicated a growth of at least two or three generations of trees. A new natural forest is almost if not quite uniformly composed of one variety only, and the change to a variety of species is made very slowly. But was this ground ever occupied by forests? Their erection with mound-builder's tools, if it involved the clearing of a forest as a preliminary work, is so nearly impossible that we cannot imagine it would ever be undertaken. It involved not only the clearing of these lands of the forest, but also the neighboring lands which were to be subjected to tillage. It is with the utmost difficulty, in moist and tropical climates, that men armed with the best of steel tools made a successful battle with the forests. It is much more reasonable to suppose that these works were originally located in a treeless region, and the works evidently of the same age scattered over the country indicate that this treeless region was of large extent, covering probably most of the alluvial valleys. The inference would follow that the abandonment of the region marked the time when the slow intrusion of the forests reduced the amount of tillable land below the necessities of the community, the time since their abandonment marks the whole period of the forest growth upon the alluvial bottoms. If the question is asked, how long is this period? the only answer that can be given is that in the term as applied to human history, the time was long, how long, no one can tell.

Other evidence in favor of the forest theory is given by Randall:

The Structures were almost without exception completed before being abandoned; they left no unfinished work, from which it might be inferred that they did not depart prematurely nor in haste.

Fowke⁴⁴ criticises Read's theory of recent forestation and calls attention to the large amount of decayed timber found in the mounds. The cutting of the relatively small amount of timber from the hill-tops, to be used structurally, is, however, a very different thing from clearing large areas of the forests. Jennings⁴⁵ says,

Another point of interest in this connection is that the forest might not be able to occupy purely mineral soil immediately, as it was left by the retreat of the glaciers. On Presque Isle, which, however, is sand at first, it takes some time for the soil to become suited to the growth of pines or oaks, although I can have no doubt that disseminules of the pines are constantly

⁴⁴ Fowke, p. 122.

⁴⁵ O. E. Jennings, private communication: partially based on "A Botanical Survey of Presque Isle, Erie Co., Pa.," *Annals Carnegie Museum*, 5:321-328, 1908.

getting into the new territory. It takes about forty years to get a pine forest started and about a hundred years to establish a real white pine forest, and this is replaced by the black and red oaks at the age of about 250 years. Flood-plains, alluvial soils built up along streams and rivers, usually pass through a number of preliminary stages before passing into the mature climax sugar maple-beech forest. Ordinarily these stages are dominated by willows and sycamores; these are displaced by white elm and red maple; and this latter forest in turn by the sugar maple and beech as the soil becomes elevated sufficiently above ordinary floods to be moderately moist rather than wet and with more or less forest humus commingled with it. I have an idea that along our streams in Ohio and Pennsylvania this process of building up a climax flood-plain forest takes not less than four or five hundred years. It took about 600 years for Nature to begin to plant hemlocks on Presque Isle. On an artificial mound, however, the conditions are different and a climax forest could establish itself more quickly. If the low lands were in grasslands the invasion by forests would be determined more than anything else by the water content and that might be involved in either rapid or slow changes. There are still prairies near Sandusky, Ohio.

Taylor⁴⁶ has made a number of interesting and keen observations anent the peculiar and significant growth habits of the trees in the Ozark country, especially near Pineville, Missouri. These peculiarities, when interpreted from an ecological standpoint and with the geology of the region in mind, yield valuable evidence in regard to the recent climatic change under discussion.

This region consists of the remains of an old plateau which has been so completely dissected by the streams that very little of the original flat upland surface is left. This country was formerly covered to a depth of several hundred feet more of Boone Chert than exists there today; this Boone Chert is composed of bands of chert, from four to six inches thick, interspersed with layers of limestone of several times that thickness; Dome Cavern, about one mile towards Pineville from Saltpeter Cavern, illustrates this very well. Through the course of ages the limestone has dissolved and flowed away in solution, leaving behind the blanket of fragments of the little soluble and very brittle chert which covers the hill-tops today.

A cool, rainy period, which started in 1226 B. C.,⁴⁷ as shown by the stalagmites which grew in caverns in this vicinity and recorded

⁴⁶ Jay L. B. Taylor, Forester and Engineer, Pineville, Mo., private communication.

⁴⁷ Vernon C. Allison, *The Antiquity of the Deposits in Jacobs' Cavern*, American Museum Anthropological Series, Vol. 26, Part VI, 1926.

the climatic changes occurring during their growth, washed the soil from the hill-tops down into the flood-plains of the streams. These flood-plains are from one half to one mile wide and lie about two hundred feet below the ridges; they contain loose soil and gravel to an unknown depth. Later, the cool, rainy period was succeeded by a cool, windy period which ended about 520 A. D. The dust storms of this cool, windy period deposited a thin dust or loess mantle over the region; the annual dust-fall today is over ten ounces for each square yard and this vicinity can not be called a dusty country. After (and probably somewhat before) 520 A. D. grass grew on these hill-tops, covered with a scant soil deficient in humus, until the soil and climate became favorable to tree growth; in addition to the annual dust-fall the quantity of soil slowly but steadily increased through the weathering of the chert fragments, especially the smaller ones, and the action of the vegetation—mostly grass—until there is now from fourteen to eighteen inches of rocky soil underlaid by a hard-pan said to consist of a decomposed or modified chert.

The first trees to gain a foothold in this poor, humus-lacking ridge soil, were the pines which advanced along the ridges, probably with a flanking fringe of juniper and red cedar at the edges of the ridges, near the limestone escarpment. Somewhat earlier than the advance of the pines along the ridges, the broad-leaved hardwoods invaded the country along the river courses and, by the time the pines had become firmly established in the poor soil on the ridges, these river bottom forests had long passed through the forestation cycle described by Jennings above and had reached the mature, mixed, climax forest type—the oak forest type in this region.

The pine forest, firmly established on the ridges by 1840, was a normal pine forest, in its prime, and contained many trees well over four feet in diameter; it may be that where there happened to be left flat surfaces on top of the ridges—remnants of the old plateau surface—and where there was some means of approach up from the river bottoms—ravines, with soil covered slopes, for example—the oaks from the river bottom mature, climax forest—especially the burr oaks—had succeeded in gaining a foot hold upon the ridges by this date.

In 1840 United States troops tried to prevent "squatters" and unauthorized persons from cutting the timber in this section and in the course of the resulting "Pine War" extensive forest fires burned practically all the ridge timber; some of the old stumps, over four feet in diameter after being burned over, were still to be found as late as 1895 but the pine forests, which gave Pineville its name, were gone.

As usual after a forest fire a new dynasty of trees captured the hill-tops; the growth of the pines had added sufficient humus material to the soil to make it suitable for the growth of the broad-leaved hardwoods and the heat of the forest fire had killed off all vegetable life, including the seed of the pine, to a considerable depth. As a result of these forest fires, then, the mature, mixed, climax forest—the oak type trees in this region—river bottom forest, gained the ridges and are found there today. A few scattering pines are left but the oaks do not grow as tall as the pines and for this reason the young pine tree, after growing taller than the surrounding oaks, is deprived of the wind-break protection formerly offered by the pine forest and, insecurely fastened in the thin layer of soil, it is easily blown down. This is probably the reason that, with the exception of one or two pine trees with a diameter of about two feet, all the pines in this section are not over one foot in diameter; they outgrow the wind-break protection of the shorter oaks and succumb to the wind; they are, however, of the same species as the earlier pines which left the burned over stumps of a greater diameter than four feet.

At the present time, then, the hill-tops in the Pineville region are covered with many oak type trees and only a few immature, scattering pines; the scanty soil and near-by hardpan produces cramped, contorted, and gnarled tap-roots. These distorted and malformed tap-roots frequently decay and the decay progresses up the bole of the tree; a large part of the present hardwood timber is thus defective—hollow or rotten at the center—from this cause.

This shallow soil is also the probable explanation for the very curious and intense aversion, in this locality, to permit trees to grow near the house. The natives vaguely say that "trees around

the house are not healthy." These people either do not recognize the fact that they know the trees to be dangerous because so easily blown over on top of the houses—on account of the thin layer of soil in which they cling—or else they have a far more subtle sense of humor than they are ordinarily credited with; the former is more plausible.

The above ecological evidence supports the recent climatic change as does also the archaeological information yielded by the remains of the prehistoric Ozark "Bluff Dwellers" who occupied the shelters and caverns of this region.

The Ozark Bluff-Dwellers, of southwestern Missouri and northwestern Arkansas, had maize. The caverns and shelters which they occupied were formed in the hard St. Joe limestone lying on the soft Eureka shale. This shale is so dry that ordinarily perishable objects are preserved. The Bluff-Dwellers used immense quantities of dried grass to line their storage pits, graves, etc., and any quantity of this dried, cured grass, of a reddish color, can be found in these shelters today. This grass is of a kind resembling the common "blue stem" (some of this grass may be a sedge) and does not grow in forested regions. The large quantity of this dried grass present in these shelters shows that the Ozark country was not forested when occupied by the Bluff-Dwellers and this was from 1226 B. C. to about 520 A. D.⁴⁵

The question of what became of the Mound Builders has been considered by several investigators. Fowke⁴⁶ suggests that the Cherokee (south of the Mound Builders' country) and the Mandan (west of the Mound Builders' country) may be descended from the Mound Builders. Possibly the historical Iroquois, who retained a form of the long houses, occasionally buried their dead in the single mounds, sometimes built fortified villages, and respected the ancient earthworks, were descended from the Mound Builders.

Wissler traces the distribution of agriculture and the use of turkey-feather mantles from Mexico to the North Atlantic states; connects the long house of the Iroquois with its southern

⁴⁵ Allison, 1926.

⁴⁶ Fowke, pp. 470-471.

equivalent; notes the coincidence of palisaded villages with the Eastern maize culture; and the association of temples with mounds throughout the area of intensive maize culture⁴⁹. He finds the grooved axe lacking on the Pacific slope but shared by the Pueblo, Plains and Eastern maize-growing Indians. With respect to village organization, the clan and moiety system, and kinship terminologies, he likewise establishes a bond between the Southwest and the East, including the Iroquois. The Iroquois share with Pueblo tribes the practice of monogamy, while the ceremonial use of the black drink once more links the Southwesterners with Central and Eastern corn planters.⁵⁰

Wissler⁵¹ sums up the Iroquois culture as follows:

The Iroquois tribes were even more intensive agriculturists and potters; they made some use of the blowgun; developed cornhusk weaving; carved elaborate masks from wood; lived in rectangular long houses of a peculiar pattern; built fortifications; and were superior in bone work; maintained a series of masked secret societies, a corn harvest festival, and, above all, a highly developed political organization or "League of the Six Nations," which made systematic conquests.

The time of the hospitable climate in the now semi-arid Southwest and the simultaneous inhospitable climate in the Central part of the United States—Mississippi basin, for example—was from 1226 B.C. to about 520 A.D.^{52, 53} This was a time of great development of the village Indians of the Southwest but only a hunting, marauding, people occupied the central part; this was also the time of the Ozark Bluff-Dwellers. The time when the present semi-arid conditions were completely re-established in the Southwest was about 520 A. D.; the lessened food supply of a now semi-arid country forced a part of the population into marginal migration.

The inhospitable climate in the Mississippi basin reached a climax about 520 A. D., when the moisture-fall reached a minimum. For some time the arid, cool climate had favored a grass vegeta-

⁴⁹ Wissler, pp. 13, 59, 110, 115–117.

⁵⁰ Wissler, pp. 123, 133, 158, 165, 186, 187, 195.

⁵¹ Wissler, p. 237.

⁵² Allison, Climatic.

⁵³ Allison, Quaternic.

tion in the newly formed alluvial river valleys. A people of pronounced characteristics, but with the basic traits of maize culture, discovered this situation, favorable to growing their maize, and rapidly occupied and flourished in the region. When the present climatic conditions were restored, about 520 A. D., and the increasing moisture-fall and the accumulated humus material in the soil (from the growing of grass and maize) reached a point where it was more favorable to growing trees than maize, the Mound Builders began their long losing fight to stay the advance of the forests with their stone (and some few copper) tools. Jennings believes that it requires four or five hundred years (at least) to establish a climax flood-plain forest along the streams of Ohio and Pennsylvania; the Mound Builders fought their losing fight, then, between about 520 A. D. and somewhere around 900 A. D. to 1000 A. D. They were so well established in 520 A. D. as witnessed by their ensuing long struggle with the forests, that it apparently requires an equal period of time, 500 years, to account for their firm implantation. 500 years back from 520 A. D. is 20 A. D.; the Mound Builders then entered the Mississippi basin about the beginning of the Christian era.

There is a way of roughly checking this later date—the time when the Mound Builder culture succumbed to the advancing forests. Taking Read's⁵⁴ minimum estimate of two generations of trees required to establish the mature climax forest on the Ohio mounds, a period of two entire tree generations lies between the present and the passing of the Mound Builders. A majority of the upland trees near Pittsburgh, Pennsylvania, are white oaks; they are all about three hundred years of age and they are all old men—they are dying; these trees are about three feet in diameter. It is thought that the white oaks came into this region about three hundred years ago as a result of a forest fire which destroyed the forest of that time and also all seed in or upon the surface layer of forest soil.

Exactly what causes a tree to die is not well understood but it is thought that a tree continues to grow until the amount of tree material is in equilibrium with its moisture supply. If it can

⁵⁴ Read, pp 81-82.

be so visualized that a tree attains such a size, finally, so the tree is unable to elevate enough moisture to grow new wood, then, in that year will the tree start dying—at the top, where it is hardest to raise the moisture up to. This suggests that the better the moisture conditions, the longer the normal life of a tree, and it is probable that on the mounds of Ohio, with their great depth of favorable soil, a tree would live nearer five hundred years than three hundred years. Read's two generations of trees, then, give about one thousand years since the mounds in Ohio were abandoned to the forests. One thousand years ago is about 900 A. D. The Mound Builders thus occupied the Mississippi basin from about 1 A. D. to 900 or 1000 A. D.

The Mound Builders were derived from the same remote (relatively) stock that produced the Pueblo Indians. They occupied the Mississippi basin during approximately the first one thousand years of the Christian era and were finally disseminated by the results of climatic changes. Part of the Mound Builders may have gone south (Cherokee?) and part of them may have gone west (Mandan?) while part may have remained in New England (Iroquois?). They all retained some of the maize culture of the Mound Builders but in the main they modified into more or less hunting Indians.

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BOOK REVIEWS

METHODS AND PRINCIPLES

Der Ursprung der Gottesidee. Eine historisch-kritische und positive Studie. I: Historisch-kritischer Teil. P. W. SCHMIDT. Zweite, stark vermehrte Auflage. Münster in Westfalen: Aschendorffsche Verlagsbuchhandlung, 1926. XL, 832 pp., 1 map.

As the title indicates, this is merely the first volume of the new edition of Father Schmidt's *Origine de l'Idée de Dieu*, originally issued in *Anthropos* (1908-1910) and subsequently as a separate book in German (1912). The next two volumes of the colossal undertaking are designed to deal with the religion of the primeval cultures and of the pastoral nomads, respectively. The latter represent one of Schmidt's three basic post-primeval *Kulturkreise* and, because of their local segregation, admit of separate treatment; while the patrilineal and the matrilineal, as well as later cultures, are intertwined to such an extent as to require a different mode of attack. Accordingly, the final volumes will be devoted to a regional survey of Oceania, Indonesia, and Indochina; Asia; Africa; Western Asia and Europe; North America; Central America; and South America.

It cannot be the purpose of a brief review to discuss in detail the judgments passed by the author on all the principal modern schools of ethnological and theological thought concerned with an elucidation of the subject-matter. The readers of this Journal will appreciate the succinct summary of the methodology and scheme of the *Kulturkreistheorie* (743-766) and will be grateful for the attention given to American data and American views. Father Schmidt defines religion as

the recognition of one or more personal beings towering above earthly and temporal conditions, and the sense of dependence upon these beings. (p. 5).

As might be expected from his earlier writings, there is an exceedingly detailed exposition of Andrew Lang's views and of the discussion precipitated by his championship of a pre-animistic monotheism (134-487), the result being adjudged highly favorable to Lang's interpretation (485-487). In these sections the author displays an enviable familiarity with the Australian literature, as well as his customary skill in debate.

Two criticisms may be legitimately advanced against the volume before us. In his attempt to cover the field as exhaustively as possible, Father Schmidt not infrequently loses a sense of perspective. Whether one agrees or disagrees, it is interesting to get his impressions of the theories of the French sociologists, of Sidney Hartland, Van Gennep, and Preuss. But how is ethnology to profit from a fifteen-page demolition of one H. Eildermann (713-728), who turns out to be a communistic pamphleteer pathetically ignorant of our science? The social sciences should not be pedantically exclusive, but somewhere the line must be drawn, for otherwise consistency would demand consideration of every writer who deals with religion at all,—a manifestly impossible enterprise.

Secondly, Father Schmidt seems to exaggerate the bearing of certain concrete facts upon his favorite thesis. Precisely because the occurrence of a primeval monotheism is a matter of the utmost importance, we must demand the most rigorous proof of its reality. But with the best of intentions I cannot concede to Father Vanoverbergh's meagre report on Philippine Negrito religion the value apparently ascribed to it by the author (p. 786). Similarly with the Tasmanians: I willingly grant that Father Schmidt has squeezed out of the data everything they can possibly yield; but to my mind they are so poor in content that the ingenuity and erudition lavished upon them seems all but wasted. I cannot help repeating the principle that for a definitive judgment on these elusive phenomena the best ethnographic sources are barely good enough. Inferior material may be useful for tracing the geographical distribution of external features but not for the determination of the subtlest of moot-points.

These blemishes detract from the architectural perfection of the work, but its learning and dialectic ability are as impressive as in all of Father Schmidt's major publications. The positive contributions in the volumes announced for publication will be eagerly welcomed by ethnologists of all schools.

ROBERT H. LOWIE

The Diffusion of Culture. (The Frazer Lecture in Social Anthropology, 1927.) New York. R. R. MARETT. Cambridge University Press (sole American agents: The Macmillan Co.), 1927, 38 pp.

With characteristic urbanity and elegance of style Dr. Marett here issues a rejoinder to Professor Elliot Smith's most recent attacks on Tylor and Frazer. The reviewer fully shares the author's admira-

tion for the former. As regards Sir James's contributions to anthropology, candor would compel me to make many reservations as to Dr. Marett's estimate. On the other hand, I am in thorough accord that Professor Elliot Smith's conception of Frazer as a disciple of Tylor and a continuator of Tylor's thinking is untenable; indeed, I should deprecate it with much greater vehemence. However, the gracious gesture toward the close of the lecture strikes a responsive chord:

I would add that in real life Professor Elliot Smith has always struck me as a most reasonable as well as otherwise charming man. It is only on paper that he appears to me to let his enthusiasm run away with him.

ROBERT H. LOWIE

The Origin of the State, reconsidered in the light of the data of aboriginal North America. WILLIAM CHRISTIE MACLEOD. Philadelphia. 1924.

In this essay Dr. MacLeod discusses the origin of social stratification, because he holds that "the state or government takes its origin coincident with social stratification." He examines critically two widely accepted theories, which are based on unilateral conceptions. His criticism is, on the whole, conclusive, when he tests these theories by the facts of aboriginal North America.

MacLeod demonstrates that the American evidence¹ lends no support to the conquest theory of the origin of the state, developed by Gumplovitz, Ward, Oppenheimer, and a host of lesser sociologists. He shows, also, that there is no basis for the extreme claims of the diffusionists, who say that aristocracies are largely the results of culture contacts.

A second view maintains that developments within an unstratified group, without the intervention of external influence, bring about social stratification. When he approached this study, Dr. MacLeod tells in his foreword, he believed that the interpretation of political evolution offered by Friederich Engels was fairly secure. This theory conceives that the internal segregation of classes . . . is a consequent of economic changes which bring about a marked associational division of labor—a functional differentiation resulting in a difference in relative power consequent upon progressive inequality in the ownership of the means of production.

¹ New England and Chesapeake Bay Algonkian, Northwest coast, Florida and Louisiana, and the Iroquois tribes.

But he became convinced that this view must be rejected, and he adds to the many counts in the case against a narrow economic determinism.

The older theories are demolished to make way for a new hypothesis, which is another version of the second view. In this, emphasis is placed on the psycho-physical differences between individuals, which bring some persons naturally to leadership.

The state, or government, takes its origin coincident with social stratification; every state, therefore, is indeed a 'class state,' and *the state* so conceived, *is implicit in human nature.*²

Dr. MacLeod thus summarizes his thesis:

The process of the evolution of social stratification and of the class state which is its political consequent is a socio-psychological process, and its development is independent of any necessary correlation with economic evolution and independent of the diffusion of cultural forms. Aristocracies find the starting point of their evolution in the establishment of the office of chief by enterprising individuals; this office becomes hereditary in the chief's family, and generally chiefs' families tend to intermarry and perpetuate within a narrow circle the prerogative of government. The segregation, within a community, of an aristocracy, means the complementary segregation of the masses as a class of commoners; the tendency of the aristocracy to become a closed caste further segregates rising commoners as a bourgeoisie.

Religious sanctions of the political order, claims by rulers on the labor and products of the people, subordination of assimilated groups, where they appear, are regarded as consequents of the evolution of social stratification, and not as ultimate conditionings.

In criticism of this essay, it may be said, first of all, that it is based on too narrow a view of the problem. It will be difficult to find general agreement for the limitation of the study to social stratification. This limitation leads to the ignoring of large sections of aboriginal America. Many of the Plains tribes, for example, had councils, although they did not have chiefs and aristocracies, unless (by a quibble) one calls all elders aristocracies. To make all social stratification arise because of ascendant individuals and the gradual and cumulative accretion of power in their hands and that of their descendants is an exaggeration, it seems to me. The economic basis of power, and the magico-religious sanctions of authority cannot be totally neglected.

MacLeod has also overestimated (at the same time that he has not clearly differentiated) the psychological variations in the membership

² Italics in original.

of a primitive community. Leadership and subordination are not merely born in the blood. They exist in a community of men, who live within different types of society. Some individuals are better fitted than others for the performance of various functions. Consequently, what we find, often, is not the segregation of authority in the hands of a single individual, but the separation of power, on separate occasions, among a large number of individuals.

Furthermore, MacLeod's essay is vitiated by the same methodological error found in the works of the men he criticises: it is based on a unilateral conception of causation. *This* is the way the state arises, he says. Perhaps, in some instances, it does. But such a variegated institution as social stratification, and such a complex of institutions as the state, arise in various ways, among which, of course, may be that suggested by Dr. MacLeod.

MAURICE GREER SMITH

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Vererbungslehre Rassenhygiene und Bevölkerungspolitik, Ed. 3.
H. W. SIEMENS. Munich: J. F. Lehmann, 1926, pp. 125.

J. F. Lehmann's Verlag has issued a third edition of Dr. H. W. Siemens' well-known little book on Heredity and Race Hygiene. This edition has been thoroughly revised and considerably enlarged. The second edition was translated into English by Dr. L. W. Barker and published by D. Appleton and Co., N. Y. in 1924. We may limit ourselves, therefore, to a consideration of some of the subjects treated at greater length in the present edition.

A new section on the investigation of human heredity gives an interesting discussion of identical twins, a subject which the author has treated more at length in his volume on *Die Zwillingspathologie*. The chief feature of the new edition, however, is Dr. Siemens' discussion of positive eugenics in his section on "Geburtenpolitik." The birth rate in Germany has been speeding downward at a rapid rate, especially among the more cultivated classes. Even the better situated among the rural landholders have reduced their birth rate until in large sections of the country they are no longer a self-perpetuating group. Economic pressure is causing race suicide among the army of government employees and the educated classes in general. How to stimulate an increased birth rate among these classes, whose

loss threatens racial decadence, is regarded by Dr. Siemens as the most urgent problem of practical eugenics. His discussion of tax reform on the basis of family size may be passed by as a measure useful as far as it goes, but quite inadequate to meet the situation. He looks with favor on von Grüber's suggestion that not more than one-fourth of a family fortune should be bequeathed to any one member. A family consisting of less than four children would inherit only a part of the fortune, the remainder going to the State. This regulation might tend to stimulate the production of larger families among the thrifty, provided—and this is a large proviso—they did not devise some means of evading the law.

Dr. Siemens does not believe in the indiscriminate encouragement of large families. He would lighten the burdens of all families with more than three or four children by relief from taxes and, in the case of government employees, by the grant of additional stipends for every child beyond the minimum number. He has not elaborated any general scheme for the eugenic improvement of the community at large. Just how the invidious distinctions which positive eugenics implies are to be made and acted on he does not make clear. The importance of diffusing knowledge of heredity and eugenics is emphasized as an essential preliminary to persuading the public to accept any scheme of eugenic reform. When the urgency of eugenic improvement is sufficiently realized, perhaps some feasible way out of the difficulty will be found.

S. J. HOLMES

AMERICA

Der Kollektivismus der Inkas in Peru. HERMANN TRIMBORN. Sonderabdruck, *Anthropos*, 20: 978–1001, 579–606 (1925), Wien.

About the material culture of the ancient Peruvians we learn more each year. But about their social and economic organization we must be satisfied with the little that the Spanish chroniclers gave us. Many reconstructions have been made upon the authority of the accounts written immediately after the Pizzaro Conquest. Probably the best known, principally because it has a great age, depicts Peru as a highly organized, collectivistic state. This collectivism is regarded as the glory of the Incas and is sometimes considered a model for Utopia.

But it has been contended now for some time that this view is a myth, and more careful work and the advent of more critical

methods has led to the discarding of important parts of the traditional view. Dr. Trimborn has summarized the evidence available for a description of the economic life of the Inca Empire, and he agrees with the critics of the older statements. His essay includes a careful examination of the principal secondary works as well as the source materials, and he shows how many writers misread the facts because they brought with them too many, or false preconceptions.

In general, Dr. Trimborn follows the lead of H. Cunow¹ who declared over thirty years ago that the village community was the basis of Peruvian economy, in the time of the Incas as well as earlier. He contends, as did Cunow, that the Incas did not create a semi-socialist state, and that their empire was a vast agglomeration of village communities.

The Incas, as is generally agreed, did not create the entire civilization found by the Spaniards, but built upon the pre-existing cultures of the region. In 1527, Inca land was 250 miles long and 60 miles wide. This large area had been conquered over a period of years, and the story of the conquest is in many points similar to that of the expansions of the Romans from the Tiber.

Dr. Trimborn gives the geographical and sociological setting for the culture of the Peruvians before going on to his main task, which is to discover the essential nature of their economy. He centers his attention on the economic functions of the village community, and gives a comprehensive account of property and the organization of production. The Peruvians were agriculturalists, who held land in common, which was regulated by the village group.

As Markham says, the Incas found the system of village communities and altered it to the requirements of an empire. This, Trimborn declares, they did by altering village custom in three ways: they segregated the Inca and cult lands; they created private property on royal fiefdom in some cases; and they divided the tribes into the hundreds, which served as the basis thereafter for the social organization of the villages.

Two-thirds of the land were taken by the conquerors: one-half of this amount went to the Incas or rulers; the other, to the maintenance of the priesthood and for the performance of devout ob-

¹ H. Cunow, "Die altperuanische Dorf-und Markgenossenschaft," in *Ausland*, vol. 63 (1890), and *Die sociale Verfassung des Inka-Reiches*, Stuttgart, 1896. Cf. V. A. Belaunde, *El Peru antiguo y los modernos sociologos*, Lima, 1908; and C. R. Markham, *The Incas of Peru*, pp. 170-172.

servances. The desmesne, or tribute lands, included part of the arable, pasture, and forest, and all the minerals. The Incas sometimes gave private property in some of their tribute lands to nobles, who held personal titles. As a result of the conquest, there were four social classes in the Peruvian empire: 1. The Incas, the ruling family of the Inca tribe. 2. The Orejones, the members of the Inca tribe. 3. The Curacas, the leading members of the subject tribes. 4. The Tributarios, the whole of the conquered peoples. Each of these classes had rights and duties.

The remainder of the land belonged to the village community, which divided it yearly according to the needs of the family working the land or the pasture. The people paid taxes to the central authority with their labor on the tribute lands.

The *Sippe*, which were united by ancestor cults, built a *Rechtsschutzverband* and a military community. The *ayllu* [the sib group, *die Sippe*] were settled in villages. Land was the collective property of the *Sippe*. The arable was divided among the villagers, and its production regulated. A part of the territory, the common, remained undivided, especially the forest and pasture. The labor and the products of this undivided land were communal, as were the herds. Private property in movables, as well as inheritance in them, existed.

The union of individuals in the village group is deemed to have been more important than the influence of the central authority.

The village group was practically autonomous. The amount of the tribute land was settled; to all other lands the village had unlimited claim. It ruled its production and distribution through village custom. The group was self-sufficing. Inter-local trade was limited to those few things which were specialized in other regions. All exchange was by barter.

In this community it was the duty of all to work. For the tribute lands there was collective labor, but usually individual labor otherwise.

Dr. Trimborn thus summarizes his conclusions:

The Incas created no socialistic *Groszstaat*. The Inca-roads and granaries did not serve the needs of exchange throughout the state, but only deliveries of taxes in kind, for which the village community, like the Russian *mir*, was collectively responsible. The Incas did not promote inter-local trade. In the property relations of the villages they appear only as the recipients of the tribute lands, which were given to a small number of nobles. We can see economic activities of the Incas only in the laying of the great aqueducts, whose use was regulated by the villages, and in making possible increased production by colonists, in so far as these did not participate in military functions.

To call the Inca Empire a socialist state *par excellence* is to misunderstand the real nature of this conqueror-empire. The only way, indeed, mentioned by some authors in which the central Peruvian authority showed its social character is its support of famine-stricken provinces from the state granaries. This action, however, can be termed social only in its consequences, and not in its motives, because each such aid granted was a good outlay of capital, in the sense that a creditor must take an interest in the debtor's capacity to pay. Where the conquerors did nothing, as in the case of the sick and the aged, the support of these was left to the village.

We are well informed as to the taxes and compulsory labor imposed on the subject people. About the *Sozialpolitik* of the conquerors, however, we possess only vague reports, which do not give us a picture of the Peruvian economy as a collectivistic Utopia.

With unimportant exceptions the economy of the village communities was untouched by the central authority. The Incas did nothing to adjust the social differentiations, undertook no centralization of production or consumption. They left the economic life of the autonomous, self-sufficient village communities decentralized, as they found it.

Dr. Trimborn's general contention is undoubtedly correct, but there remains the problem: how far correct? Surely, he exaggerates the resemblances between the Peruvian village group and the German *Markgenossenschaft*. The Inca Empire lasted four hundred years. Its prosperity and existence must have been based on something more positive, something in addition to the acceptance by its rulers of the system of village economies which they conquered. This essay emphasizes forms, the patterns of activity, and gives us less on the condition the of the people. Furthermore, and perhaps primarily because of the state of our sources, it omits many important details concerning the operation of the economic mechanism it describes.

MAURICE GREER SMITH

Mythen en Sagen uit West-Indië. H. VAN CAPPELLE. XII, 416 pp., illustrated. Zutphen 1926

Under this title Dr. Van Cappelle has published an interesting collection of folk tales pertaining to the Indians and Negroes of the West Indies in the widest geographical sense of the term. Guyana, however, has furnished the greater part of these tales. The origin of this book lies far back. In 1900 the author, a geologist and naturalist, led an exploring expedition into the wilds of the Nickerie district, Surinam, on which he came in close contact with Indians and Negroes. Since that time Van Cappelle never lost sight of a

subject which greatly interested him, and as far as his professional duties allowed, he devoted much of his time in collecting folk-lore material both from bibliographical sources and from correspondents in the West Indies.

The contents of *Mythen en Sagen* are as follows: Preface; List of works consulted; I. Myths and legends of the West Indian Indians; II. West Indian Negro folk-lore; III. Supplements; IV. Glossary. The lesser half of the book contains Indian tales (Carib, Arawak, Warrau), the greater half Negro lore, not only from Surinam but also from some of the islands, *viz.* Curaçao, St. Eustatius and Jamaica. The Penard brothers and Walter E. Roth have furnished most of the Indian stories, while Van Cappelle also borrowed from Brett and Van Coll. An episode from Albert S. Gatschet's *A Migration legend of the Creek Indians*—the wanderings of the Kasihta—is also retold here. These Indian tales are, in a way, more varied than those of the Negroes in which latter the Spider (Anansi) is mostly the chief actor. He is the trickster *par excellence*.

In Van Cappelle's collection we find side by side an image of the psyche of two radically different races as reflected by their lore. Inhabiting the same country for centuries, mutual acculturation, at least evidenced by these tales, is as it seems, of little or no importance. In this respect both the Indian and the Negro have held their own. The influence of the whites on Indian lore, however, has been greater, as for instance, is clearly proved by nos. 29, 40-44. As we know, transformations of original tales, the world over, are not rare. A striking example of this has been furnished by Cushing, "The Cock and the Mouse," in his *Zuñi Folk Tales*.

Before the Indian stories are told, Van Cappelle summarizes their contents on pages 7-65, in connection with the mental characteristics, religious beliefs, customs, etc. of the Guyanese aborigines. The author's sympathy with them is evident. On the contrary his admiration for a part of what one is used to call civilization is of the very slightest. No wonder. It is a feeling shared by many a traveler in distant lands, among whom Van Cappelle quotes Alfred Russel Wallace (p. 13). As generally elsewhere in America, cosmogonies, hero myths, animal and plant lore are the principal subjects of these Guyana Indian tales. The childish gladness and humor, so common in African lore, is much less marked here. A mere mentioning of the names of the forty-seven Indian stories would convey but little to the reader. Suffice it to say that those genuine Indian—not hybrid—are all equally interesting for they have been carefully chosen.

The most important part of Van Cappelle's book is doubtless that on Surinam Negro lore, especially the thirty-six tales of which a list is given on pp. 235-236. They are, more than the Indian stories, due to the untiring personal effort of Van Cappelle and his fellow workers Mr. Van Drimmelen and Mr. Nahar, the latter an educated Javanese. The Negro tales are also preceded by brief summaries. Like the Negro proverbs of which (pages 237-246) twenty specimens are given by Van Cappelle in the original text with translation (pp. 380-381), these stories often teach an object lesson, or give a moral maxim, and, as in the Indian lore, they often explain in their own naive way certain characteristics of animals and natural phenomena. Influence of the whites in some tales, at least in the modern ones, modified by the American milieu, are very evident. Twenty-seven are Spider stories in the strictest sense. Their origin is truly African. We are told how Anansi conquers a village, how he pays his debts, the part he plays as a clergyman. These and the other stories are proof of Anansi's great cunning, incredible power of resistance and ravenous appetite. Those tales in which Mr. Spider plays no part give an insight in the belief about other animals and persons, real and mythical, like the boa, the monkey, the Watra-mama, and others. Space forbids even briefly to mention the contents of these amusing stories. They must be read. Their original purport and spirit is very well rendered into Dutch from the local jargons, Negro English, Negro Dutch and Papiamento, but an English translation would be desirable for the sake of comparison with the folk-lore of other American and African Negroes.

The Supplements contain Negro proverbs from Surinam and West Africa (Ewe and Yoruba) and two tales, one from Sierra Leone, and one from Gaboon. The Glossary of twenty pages explains a number of words, names of animals, local expressions etc. met in *Mythen en Sagen*. Moreover numerous footnotes facilitate the understanding of many tales. Both glossary and notes are proof of the scholarly way in which Dr. Van Cappelle has treated his subject. But this in no way impairs the literary merits of the book, for it is well written. For those who, like the reviewer, know by personal acquaintance, the primeval forests of Surinam and their dusky inhabitants a great charm emanates from these pages, invoking memories of days bygone.

The book contains twenty-four full-plate illustrations by Willem Backer, each one referring to a line in the text. They are very

artistic throughout. The mythical, the ghostly, which pervades many of these folk tales is well rendered; no easy task indeed. Although this young artist is evidently a poet, unfortunately some of his illustrations do not quite come up to the standard as to physical anthropological and ethnographical details.

Mythe en Sagen is dedicated to the author's friends, Mr. C. Van Drimmelen, "the sympathetic champion of the interests of the American Negro population," and the present reviewer.

H. TEN KATE

CARTHAGO,
TUNESIA.

Aboriginal rock shelters and other archeological notes of the Wyoming Valley and Vicinity. MAX SCHRABISCH.

The courageous manner in which the Wyoming Historical and Geological Society, of Wilkes-Barre, Penn., has undertaken its Indian survey of the state of Pennsylvania reflects great credit upon the determination of Miss Frances Dorrance, the Director, to locate map, survey and explore the archaeological stations of the state.

That the archaeological survey is seriously under way is indicated definitely in the publication of *Aboriginal Rock Shelters and other Archaeological Notes of the Wyoming Valley and Vicinity*, by Max Schrabisch. Mr. Schrabisch who conducted the rock shelter survey is eminently fitted for this work and has had much experience in New York and New Jersey. Indeed his surveys for the State Museum of New York and the New Jersey State Museum placed him at the head of all Eastern rock-shelter archaeologists.

The report of the survey, published as Vol. XIX of the Wyoming reports, embraces 186 pages and appears upon the excellent paper that has long been used by the Society. There are 26 maps and plates.

In outlining his field for a description in the report, Mr. Schrabisch writes,

Little is known regarding the history of the several Indian tribes dwelling in and near the Wyoming valley prior to the advent of the white man. Having been the converging point of so many people, differing in culture and customs, one is here confronted with a veritable Gordian knot.

As the author goes on to describe his discoveries he enlarges on this culture complex, and shows that it is the result of the contact of two

great subdivisions of the Indian race,—the Iroquoian and the Algonkian. In turn each of these groups was further divided, both by time and cultural attainment. Since all the various groups and subdivisions of stocks and tribes influenced the region and used the same general areas for camps and village sites, the distribution of cultural artifacts is confused. Only an expert can make any approximation of the identity of certain classes of articles.

Mr. Schrabisch outlines the general characteristics of each group, and correctly interprets the great differences in pottery designs and forms. Pottery is a good index to the identity of a site.

The report describes the numerous rock shelters and shallow caves in the Wyoming region and summarizes the results of excavations. The explorer states that nothing of outstanding importance was discovered in the way of specimens, but the facts which he brings to light are a genuine contribution to archaeology. The cave layers or deposits which were opened were not stratified as in the case of Finch's rock shelter found by M. R. Harrington in Westchester Co., N. Y., and there was no evidence of colonial contact.

In his summary the explorer says:

Pondering the evidence afforded by rock shelter remains, it can hardly be doubted that they are to be referred to what is called Middle Algonkian, comparable to the culture complex of New Jersey, with its crude pottery forms and stamped decorations, though frequently betraying, as just stated, the cultural impetus received through close contact with the Six Nations, their masters. As for other industrial types, dug up under rock shelters, such as objects of stone, they are unquestionably to be correlated with Algonkin culture None of the ten rock stations discussed; . . . afforded any proof of Archaic Algonkin occupation.

The value of the rock shelter survey and the report issued covering the activities of the Society in this direction, is considerable. To the mind of the reviewer it shows that the early Algonkian people did not early enter the mountainous regions of Pennsylvania or use rock shelters until at the close of the second Algonkian period, and even then left but slight traces compared with the evidences left by the Iroquoian peoples, who came at a much later date. There is nothing here comparable with the "cave dwellers" of Europe.

The survey shows, also, that the Wyoming valley was a place of passage rather than a homeland. Numerous tribes of at least three stocks traversed it and left their scattered remains. It is only when the Iroquoian people, as the Andaste, Onondaga, Cayuga and Seneca

Iroquois came upon the scene that culture traces become positive and abundant. Indeed, the Iroquois used the Wyoming valley as an area in which to herd their southern vassals, and educate them in the folkways of their famous confederacy. It was here that Shikellamy was viceroy for the Six Nations council.

The report is well written, and Mr. Schrabish has an easy style that makes a perusal of the work a pleasure. The Wyoming Historical and Geological Society is to be congratulated upon this auspicious beginning of their wider survey of the 1,900 sites charted for study and examination.

ARTHUR C. PARKER

OCEANIA AND INDONESIA

The Southern New Hebrides, an Ethnological Record. C. B. HUMPHREYS. Cambridge: University Press. 1926. Pages xvi, 214. (Price 12s. 6d. net.)

This book represents the first attempt to describe in English the ethnological conditions of the five southern islands of the New Hebrides. There are no illustrations in the volume, but there are references to Speiser's plates. Mr. Humphreys' book is a model work so far as range of topics is concerned. He even presents anthropometric data, not only averages, but, what is more valuable, the individual measurements. These are confined, however, to males. For some unstated reason he appears not to have measured females.

The native culture had suffered considerable alteration at the time of Mr. Humphreys' visit, which seems to have been within the last decade, although he does not give the date. He calls attention to features present in Captain Cook's time but lacking now. He calls attention also to features observed by him which contradict the accounts of observers within the last thirty or thirty-five years. It is not always clear if these discrepancies are due to faulty observation or to actual changes in culture. If the latter is the explanation, and the white man is not responsible, then it would appear that we have a most interesting phenomenon which should yield data as to the rate of change in primitive culture.

The concise, clear presentation of facts which constitutes the body of the book is followed by a concluding chapter of hypothesis, in which the time-honored migrations of certain writers on Oceania hold sway. Upon a substratum of pygmies, who scarcely penetrated

into Melanesia, spread the Oceanic Ulotrichi who formed the aboriginal population of Melanesia. Then followed a great wave of pre-Dravidian peoples, who did not enter Melanesia but passed into Australia. Next came the Austronesian-speaking peoples who

spread into Indonesia and Melanesia in large numbers and reached Polynesia where they formed the aboriginal population in many islands. As they interred their dead in the sitting position they have been called the Sitting-Interment people, and it was they who, by fusion with the Ulotrichi, formed the dual people leading to the dual organization of society and its important results in Oceanic culture. These Austronesian-speaking people are also credited with having introduced many new cultural units such as a belief in spirits, the practice of magical rites, circumcision and the outrigger canoe. Descent was through the mother, with the result that, when the dual organization of society became firmly established, matrilineal descent combined with exogamy remained an important element in this culture complex.

The fourth movement of peoples may be divided into two classes, those who used kava and those who used betel. The kava folk are assumed to have brought with them, among other things, patrilineal descent, secret societies, extended interment, preservation of the body, and megalithic monuments, as well as cremation. The betel folk never got beyond Santa Cruz and it is unnecessary to give them any consideration here.

As will be plainly seen, this hypothesis involves the naïve assumption that the cultural features spread only as the people migrated, that the custom of betel-chewing, for example, did not extend beyond the region to which betel-chewers migrated.

How completely the author is under the sway of the hypothesis of different migrations, "according to the present belief of ethnologists," is exemplified by the following: He regards "interment on the back in the earth, with or without the knees flexed" as

the form of disposal introduced by the kava folk, [which] for some reason or other, superseded entirely the sitting interment of the dual people, which is commonly supposed to be an important element in the earlier culture complex. The most plausible explanation is that the kava folk introduced a practice so revolutionary in its influence that important elements of culture, such as disposal of the dead, became completely changed to the form practised by the new-comers; also that the dual organization of society itself, with its descent through the mother, began to change to the new order of patrilineal descent.

These traits of disposal of the dead, dual organization, and matrilineal descent are features for which the author has no evidence of former existence in the Southern New Hebrides. Yet he takes the

hypothetical mold of culture succession in Melanesia and proceeds to cram the culture of the Southern New Hebrides into it, regardless of the fact that it does not fit. He attempts to explain the little known by the unknown.

What is sadly needed in Oceania are not more shaky hypotheses based on the study of living peoples or further attempts to make the facts fit the present hypotheses, but some careful archaeological field work. The spade alone can settle whether sitting interment was ever practiced in the Southern New Hebrides. The presence or absence of other material traits can likewise be settled with a fair degree of certainty, though to be sure the spade can never settle for us the presence or absence of dual organization.

E. W. GIFFORD

Mono-Alu Folklore (Bougainville Strait, Western Solomon Islands).

GERALD CAMDEN WHEELER, B. A. (Lond.). London: George Routledge & Sons, Ltd. 1926. Octavo, pp. xv, 396. (Price, 21s.)

Mono-Alu Folklore is a model work of its kind. It is arranged to give the reader speedy access to any point which he desires to consult, for the author has prepared a very useful index to motives. In addition there are indexes to the flora, to the fauna, and to place names. Following the introduction are summaries of tales, introduced by a classification of tales into eleven groups: **A.** Origin of Natural Objects. Origins, Wanderings, and Changes of Culture Elements. Chiefship. **B.** Taro. **C.** Women not of Human Origin. **D.** Animals. Higher Animal Beings. **E.** Snakes, etc. **F.** Sexualia. **G.** Cannibalism. **H.** Journeys to Ogres. **K.** Journeys outside the World of Men. **L.** Supernatural Beings. **M.** Actual Happenings.

Part 2 of the book presents the Mono texts, English translations, tales with no Mono texts, and extensive notes. If the Mono and English were presented interlinearly or on alternate pages study would be facilitated. Part 3 comprises a Mono-English glossary and the indexes mentioned above. The Mono texts, with the translations, notes, and glossary, form a valuable contribution to Melanesian linguistics. The publishers and author are to be commended for the high standard which the book sets.

E. W. GIFFORD

American Samoa: Part I. Vegetation of Tutuila Island. Part II. Ethnobotany of the Samoans. Part III. Vegetation of Rose Atoll. WILLIAM ALBERT SETCHELL. Department of Marine Biology of the Carnegie Institution of Washington, volume xx (Carnegie Institution of Washington Publication No. 341). June, 1924. vi, 275 pp.; 37 pls.

Part II of Professor Setchell's book is of direct interest to anthropologists. It summarizes the Samoan's relations to his plant world, records the author's observations, and assembles the references to similar data in the literature. Part I lists the plant species of Tutuila. The remarks about each species embody the author's notes as to its use or non-use by the aborigines.

E. W. GIFFORD

A Comparative Study of the Melanesian Island Languages. SIDNEY HERBERT RAY. Cambridge; The University Press, 1926. Pp. 598. 6 maps.

This work relates to the central Melanesian Islands. Fiji, New Caledonia, New Ireland, New Britain, the Admiralties, the New Guinea coast are not included. The bulk of the book consists of brief grammars or comparative analyses of about fifty idioms in the Loyalty, New Hebrides, Banks, Torres, Santa Cruz, and Solomon groups. There are seventy-five pages of excellent introduction,—historical and comparative, and three of conclusion. Only truly Melanesian, that is, non-Papuan, languages are included. Comparative vocabularies are omitted, except for a brief list. Many full vocabularies seem to be in the author's hands, their publication would be extremely desirable.

Mr. Ray's competence in this field is well known. He follows in the foot-steps of Hervas, Marsden, Humboldt, Latham, Gabelentz, and, among moderns, of Codrington, Kern, and Brandstetter, and rejects the theories of Macdonald and Churchill. He finds the Indonesian element to vary greatly in strength in Melanesia, without reference to proximity to the East Indies; it is most prominent in small islands. These were evidently settled by colonists from the west, who influenced to a less degree the speech of the larger Melanesian islands that came within their influence. The Indonesian element in Melanesian has the characteristics of a pidgin-tongue or jargon; it can generally not be referred to any particular Indonesian

language. Complete vocabularies would show that Indonesian words form only a small proportion of the word-store of any one Melanesian idiom. The preponderant non-Indonesian words however cannot be shown to have community of origin in the various Melanesian languages. The inference is that the Melanesian languages were originally of variant stocks and that their apparent uniformity was brought about by the assimilation of an imported Indonesian element.

The last three conclusions are not supported by evidence given in the book. They may be largely or wholly correct; but would presumably be difficult to prove in the present state of deficient knowledge and imperfect analysis. The author cites a number of outstanding features of Indonesian grammar occurring in each Melanesian area, such as pronominal affixes, prepositions, and articles: to a considerable extent it is not only the concepts but the Indonesian forms that recur. Such elements are thought generally not to be borrowed by unrelated languages. There would therefore be some presumption, by ordinary philological standards, that the Indonesian or Malayo-Polynesian element was more basic in Melanesian than the author sees it. If it is not, and he is correct, he has furnished concrete evidence on a point of fundamental and general interest hitherto disputed, namely of the ability of languages to diffuse forms and formal elements, as well as content, on a significant scale.

A. L. KROEBER

De Rassen van den Indischen Archipel. J. P. KLEIWEK DE ZWAAN. Met 76 Afbeeldingen naar Photographieën. Amsterdam, 1925.

This compact little volume of Dr. De Zwaan's contains seventy six plates illustrating the racial types of the East Indies and sufficient text to summarize the views held by leading anthropologists regarding racial distribution in Oceania. The races are dealt with in the order of their probable entrance into the island region from the Asiatic mainland: the Negrito, the Veddoïd type, the Proto-Malay and the Malay.

The salient physical characteristics of the Negrito are given as: short stature, woolly hair, dark skin, black-brown eyes, and short skull. Zwaan is of the belief that short stature alone is no criterion of the pygmy race. This judgment would of course hold true where it is merely the individual who falls below the 150 cm. mark. But the

author also points out that there are non-Negroid races whose average is barely above the mark, that of the Lapp, e. g., being, perhaps, 152 cm. The case in dispute, however, is that of the dwarf tribes of New Guinea. The Tapiro, for example, vary from 132 to 152 cm. and the average height of twenty individuals was given as 144 cm. Zwaan does not believe it to be a settled question that the Tapiro are "pygmies," and he thereby differs in judgment from Haddon.¹

The second race to migrate, the Veddoid type, is described as having: long arms and legs, brown to dark brown skin color, and dark brown eyes. The hair is *wavy*, dark and thick. The beard growth is thin, dark and wavy. There is little body hair. The head is very long, and the eyebrows protrude. The face is broad and not very long. The root of the nose is sunken deep in the face, and the chin pointed. The nose is very flat, with broad nostrils. The lips are thin to thick. The skull is orthognathous with a very small capacity. A Veddoid type of people was once widespread over the Indies, and individuals of the type are to be found among the races which came at a later period to the islands. The Toala, first described by the Sarasin cousins, are the most typical survivors as a group in the islands. Individuals of the Veddoid type, though not groups, are to be found in the Philippines.

The third race to come to the Indies was the Proto-Malay, of whom the Battak of Sumatra are given as the purest specimens. The Proto-Malay are to be differentiated from the Coast Malay, such as the Javanese, by a shorter body, longer head, darker skin, broader and more concave nose, and a broader mouth.

The question has again been brought up of late as to whether the Deutero, or Coast Malays, are a different race from the Proto or Inland Malays. While De Zwaan does not give positive answer to this question, in his opinion the calling of the Proto-Malays by the name of "Indonesians" has given rise to the greatest confusion in anthropology. In remedy, De Zwaan advises the entire dropping of the term "Indonesian" in physical anthropology, and the use of some substitute, such as Old Malay, Pre- or Proto-Malay.

I find myself in full agreement with De Zwaan on this point. In the first place, authors do not agree as to the physical characteristics of the Indonesians. Thus, Sullivan, in describing the Indonesian

¹ A. C. Haddon, *The Races of Man*, 18, 1925.

element in Polynesia, attributes a short head to the Indonesian,² while Haddon has classified the Indonesians under Cymotrichi, or wavy-haired peoples!³ Secondly, the question arises as to the validity of a strict racial distinction between the "Indonesians" and the Malays. Kroeber, in his handbook, *The Peoples of the Philippines*, argued for the separate migrations of three races to the Philippines: the Negrito, the Indonesians, and the Malays. On the other hand, Hagen, Deniker, and more recently Heine-Geldern⁴ believe that the Indonesians are the true "Malay," and that the Deutero-Malays developed from the Proto-Malays in the form of a mongrel people, containing Chinese, Hindu, Arabic, and other admixture. Heine-Geldern points out that the settling of the coast provinces in the Indies by the cultured and racially mixed Malay occurred in late prehistoric and historic times, and is still in progress. With the exception of the Moro, this is less true of the Philippines, and Kroeber had more justification for a rigid race distinction in the Philippines than if he had treated the East Indies as a whole. Finally, the term "Indonesian" is of general acceptance as a label for the Malayan languages, and it leads to confusion when the same term is applied to a subdivision of the Malay race.

E. M. LOEB

ASIA

Kopffjagd und Menschenopfer in Assam und Birma und ihre Ausstrahlungen nach Vorderindien. ROBERT FREIHERR V. HEINE-GELDERN. (Mitteilungen der Anthropologischen Gesellschaft in Wien, 47: 1-65, 1917.)

Mutterrecht und Kopffjagd im westlichen Hinterindien. DR. ROBERT HEINE-GELDERN. (Mitteilungen der Anthropologischen Gesellschaft in Wien. 51: 105-140, map, 1921.)

Dr. Heine-Geldern, in his first paper, points out that the Wa, a Dravidian race, of Siam and the British and Chinese Shan States, still practice head-hunting. The large group of Chin, Kuki, and Lushei of Burma were formerly head-hunters, as were the Naga of

² L. R. Sullivan, Race Types in Polynesia, this Journal, 24, 1924.

³ Haddon. l. c., 23.

⁴ R. Heine-Geldern, in Buschan, *Illustrierte Völkerkunde*, Stuttgart, 1923, 2: 698.

Assam. The Garo of Bengal furnished the known western limit to this practice. According to the theories advanced by the author, the various forms of human sacrifice which formerly existed in India itself were not brought into the country by the Aryans, but were developed from Dravidian head-hunting practices, these being widely disseminated at that time. The character of the Hindu human sacrifices is discussed, and the importance laid to the preservation of the head is emphasized in every case.

Of equal interest is the theory advanced by Dr. Heine-Geldern, that the head-hunting practices of Indonesia are likewise diffused from the Dravidian tribes of the mainland. This appears plausible because of the following reasons given for head-hunting; the acquisition of wealth, the bettering of crops, the use of the ghosts of the decapitated as servants, and the test of manhood. These reasons appear in head-hunting areas both on the mainland and in the island region. In method, Dr. Heine-Geldern is willing to assume the past occurrence of traits from present day "survivals," even where historical proof is lacking. I am not in agreement with this use of "survivals." For example, it seems that the use of animal skulls as decorations is more widespread than the use of human skulls, although the two customs are often concomitant. The use of animal skulls, therefore, should not be taken as a criterion of former head-hunting in the manner suggested in the present paper. Thus, the Pagan tribes of the Malay Peninsula used animal skulls, but were never head-hunters, and the same is true of the Southern Mentawai Islanders. In the latter case, I am of the opinion that the custom was diffused from the head-hunting people of Nias.

In his second paper Dr. Heine-Geldern finds that the Garo of Bengal are the only people of Farther India who, in former times, certainly had head-hunting, and who now have complete matrilineal social organization as well. There is, therefore, no reason for the unbiased ethnographer to assume that "mother-right and head-hunting" had a common origin in this region.

E. M. LOEB

Santal Folk Tales. Edited by P. O. BODDING. Preface by STEN KUNOW. Instituttet for Sammenlignende Kulturforskning. Oslo, 1925.

The Kolarian tribes of India, of which the Santal are the most important one, are the last remnants of a race which in ancient times

seems to have played a considerable rôle in India and in the countries and islands around the Indian Ocean. The present volume of texts, therefore, should be of great importance in preserving a record of a Kolarian language. This is the more true, since, according to Kunow, Kolarian words and ideas, along with Dravidian, have formed a substratum in the languages and civilization of Aryan India. Conversely, the Aryan language and civilization have permeated the Kolarian cultures. Among the Santal we have a linguistic situation somewhat analogous to the Malay: old concrete words going back to the aboriginal people, while many abstract terms, and most terms of newer articles of a higher culture, are of foreign origin.

The very fact that it is difficult to differentiate the *bona fide* Santal from the introduced Aryan makes the task of the ethnographer somewhat difficult. Thus, the Jackal, as treated in the present volume, has a dual character somewhat analogous to Coyote of American Indian folk-lore. Sometimes Jackal is a clever and dextrous animal, always prepared to assist those who have suffered wrong. In other stories, however, he is depicted as malicious and treacherous, but is usually defeated in the end. Now the Jackal also enters into Aryan folk-lore, and Kunow suggests that it is possible that all Jackal stories are taken from the Kolarian. On the other hand, it is equally possible that the dual character of Jackal is due to the mingling of Aryan and Kolarian concepts. In American Indian mythology the dual character of Coyote can be dealt with as an indigenous phenomenon; among the Santal this cannot be done with any degree of certainty.

In like manner the Santal marriage customs are of considerable ethnographic interest. Starting from a strong patriarchal system of marriage, with wife purchase and wife ownership, a more recent system develops, with matrilocal residence and the adoption of the husband by the father of the bride. Among the Santal this variety of matrilocal residence can be of a temporary nature, which lasts for five years. During this period of time the husband works off his bride price. The matrilocal residence can also be of a permanent character. In the latter case, the father of the bride pays all the expenses of the marriage, and by adopting his son-in-law, assures himself of an heir to his property. This custom is apt to take place where there are only daughters in the family, for among the Santal, women cannot inherit.

The marriage system, as developed by the Santal, is closely analogous to the two forms of marriage reported by Marsden for the

Rejang of the Southwest coast of Sumatra. There the purchase form of marriage was called *jujur*, while the adoption of the husband was *ambel anak*.¹ The question arises, as to whether the original form of marriage among the Santal was as strongly patriarchal as it sometimes is at the present day. Bodding believes that Santal marriage forms owe much to Aryan influence. Here again, then, the interpreter of the culture is left without final solution.

Mr. Bodding has been the first to record Santal folk-lore. He may be the last. In preparing the present volume, which is replete with footnotes giving important cultural explanation, he has presented an original document, which may later be expanded, but cannot well be superseded.

E. M. LOEB

PRIMITIVE MUSIC

Etude sur quelques manifestations musicales observées en Haute-Guinée Française. CH. JOYEUX. (Revue d'Ethnographie. Paris, 1924.)

We have in this memoir an account of the music of the Malinké in Upper French Guinea. In the study of the phonographic records the author has had the assistance of Mme. Bécларd d'Harcourt whose valuable work among the races of South America has been reviewed elsewhere in this journal. Her comments, which appear in italics throughout the memoir, are characterized by clearness of observation and breadth of information.

A catalogue of the various musical instruments is given with the tuning appropriate to each. The Bala, or xylophone, seems to be highly perfected in this region and occurs in many forms throughout Africa. The tones of one instrument as noted seem to give an accurate G minor scale. The trumpets, made of horn, ivory or wood produce but one tone and seem to be of very little interest to the student of music or of ethnology. The flute appears not to have been standardized as there are flutes with two, three or four holes. They are blown by a hole in the side and not in the end, as is the practice among certain races in the New World. Of stringed instruments there seem to be several varieties, some to be plucked and some to be bowed. Instruments of percussion are also used in many different forms.

¹ *Jujur* is the usual Malay word for the money paid by the bridegroom to the parents of the bride. If we convert *ambel anak* to *ambil anak*, it would mean, in present day Malay, "taking and retaining children."

As to the vocal characteristics of this people Mme. d'Harcourt notes:

les voix crient plutôt qu'elles ne chantent; les intervalles ne sont pas constants, ainsi qu'on peut s'en rendre compte à l'audition de nombreuses reprises du même motif, et semblent, dans beaucoup de cas, indifférents; aussi les notations des chants sont-elles souvent épineuses et parfois impossibles. Mais, cette réserve faite sur la justesse, je suis convaincue que les chants ou airs d'instruments emploient les intervalles auxquels nous sommes habitués, et aucun n'est plus petit que le demi-ton.

The songs themselves, sung at the various festivals or in honor of persons from whom gifts may be expected, are solos or choruses with orchestral accompaniment. The notion of harmony, however, does not seem to be very highly developed as would appear from Mme. d'Harcourt's remark on one song:

. . . le bala frappe un si bémol tandis que le chanteur donne un si double bémol ce qui est assez cruel pour l'oreille.

The songs as transcribed are for the most part monotonous and uninteresting for the musician. One or two of them, numbers 7 and 14 for instance, would repay study.

DERRICK NORMAN LEHMER

Songs of the Copper Eskimos. HELEN ROBERTS and D. JENNESS. (Report of the Canadian Arctic Expedition 1913-18. Ottawa, printed by F. C. Acland, 1925.)

The songs discussed in this report were collected near Bernard harbor in Dolphin and Union strait in the territory of the Copper Eskimos. A few of the songs are from points farther west and a few from the Hudson Bay region.

The Copper Eskimos were not acquainted with a phonograph prior to this time; there were still a few natives, in fact, who had never seen a white man. They thought a spirit was reproducing their words, and were quite nervous at first about singing into the machine; later when more familiar with it, one or two of them were inclined to play pranks, ejaculating, laughing or talking in the middle of a song to create more amusement when the record was played over. The texts of the songs are full of this extraneous matter.

By far the greater number of the songs in this collection are dance-songs and weather incantations.

There are no labor songs; apparently there are no love songs.

The dance songs are used for lullabies. There appear to be two types: *pisiks* and *atons*, the essential difference being not so much in the music or the words, as in the manner of dancing. The performer of the *pisik* wields the drum himself, the rest of the people accompanying him in the singing. In the *aton* the drum is either not used at all, or else is played by one of the singers in the circle. After the *aton* is well started the performer generally ceases to sing and begins to gesticulate violently with his arms hopping from one foot to the other whooping with delight and delivering himself over to the wildest abandon. A clear idea of the action in an *aton* is gained from the words of one of the songs:

*My arms they wave high in the air.
 My hands they flutter behind my back
 They wave above my head like the wings of a bird.
 Let me move my feet, let me dance.
 Let me shrug my shoulders.
 Let me shake my body.
 My arms, let me fold them, let me crouch down.
 Let me hold my hands under my chin.*

The mere transcription of the songs is a task to daunt any but the most patient and indefatigable worker. Miss Roberts has not only carried out this nerve-wrecking undertaking, but has added to each song an analysis of its general make-up from the point of view of tonality and arrangement of phrases. Much of this work seems of somewhat doubtful value because it would appear possible to assign any one of several different signatures to most of the songs, and the frequent changes from one kind of measure to another (in No. 52 for example, there are some twenty such changes) makes one question the value of dividing the songs into measures in the orthodox white man's way. It is certainly easier to reproduce the songs if they are noted phrase by phrase, as has been done by R. and M. d'Harcourt in their monumental work on the music of the Incas. But the important thing is, of course, that we have the records in permanent form, and science and also the art of music will owe much to the patience and industry of the transcriber in whatever form the results are cast.

As to the songs themselves, they seem to the outside observer to have for the most part little musical value. They wander on and on with little or no variation in pitch or rhythm. Now and then, as in the "Longspur's Incantation" (No. 102), one gets a sudden

modulation of the harmony that is astonishingly effective. Some of the simple weather incantations like No. 90, for instance, have a wistful plaintiveness that is most appealing. One song, (No. 125) said to be a Russian song is a masterpiece of syncopation and kaleidoscopic modulations. It is fair to state, however, that the person most familiar with these songs, the transcriber herself, has a very high opinion of their musical value.

We find plenty of single songs here and there in Indian music that are beautiful, along with many that are not, but from the country where it is nearly always winter is brought a collection of songs that for their generally high musical merit, for real loveliness, it is hard to find a counterpart in more favored lands.

DERRICK NORMAN LEHMER

Ancient Hawaiian Music. HELEN H. ROBERTS. (Bulletin 29 of the Bernice P. Bishop Museum, Honolulu, Hawaii, 1926.)

The songs studied in this Bulletin were obtained in Kauai on the west, Oahu in the center, and Hawaii to the east. The collection may be considered as representative of all the islands, and the collector is certain that the possible failure to collect many local specimens from unvisited islands, while regrettable, is not vital to the survey as a whole. In all about two hundred tunes were taken of which some hundred and fifty are reproduced in musical notation. Sixty phonograph records have been set aside for preservation.

This bulletin provides a very valuable addition to our knowledge of primitive music. The careful analysis of the songs is a monument to the patience and industry of the author, who has not only given us a very complete and accurate account of Hawaiian music and musical instruments, but has also tried to indicate correspondences with the art of other peoples.

The music of these islanders as given in this bulletin impresses the reader as being extraordinarily monotonous. Even the music of the Eskimo, which it resembles in many respects, is more tuneful. It seems, as Miss Roberts observes, to be constructed to lie downward from the prevailing level and not to be built upward from it. This is an interesting basis of classification and might be used to advantage in the study of the music of American Indians. It is used by the author in trying to trace Hawaiian music to its source. The same object is attempted in the study of the various types of instruments.

A very interesting chapter is given over to the geographical distribution of music and instruments like the Hawaiian.

The author also touches on a particularly interesting point in discussing the possibility of the actual existence of part-singing among the natives before the advent of the white man. While there may have been, and probably was a kind of singing which was non-unison

The manner of harmonizing observable today in much of the native singing shows that the ideas of consonance and dissonance that we have never existed among the Hawaiians.

DERRICK NORMAN LEHMER

AFRICA

The Peoples of Southern Nigeria (I: Historical Notes, xii, 365 pp. 5 maps. II; III: Ethnology, xx, 976 pp., 18 maps, 251 ills. IV: Linguistics and Statistics, 234 pp.). P. AMAURY TALBOT, Resident. New York: Oxford University Press, American Branch, 1926. (\$23.50.)

In 1921 Mr. Talbot, who had already made ethnography his debtor by a fascinating volume on the Ekoi (*In the Shadow of the Bush*, 1912) was requested to conduct a census of his wards and to sketch their ethnography. The result is embodied in this gigantic report. The population dealt with is set at well over eight millions and embraces a vast number of tribes, classified under the three main heads of Sudanese, Semi-Bantu, and Bantu. Except for the Bali and their neighbors of the extreme northeast, the Sudanese occupy the western and central regions of the province. They include such famous tribes as the Yoruba, the Bini of Benin, and the Ibo. In his two ethnographic volumes the author has organized his material under such captions as Religion, Magic, Marriage, Social Organization, Occupations and Industries. In each of these sections a general survey is followed by tribal sketches, the order followed being geographical, from west to east.

An omnivorous reader, Mr. Talbot cannot always restrain himself from introducing references of questionable relevance, but this occasionally disturbing element is a veritable peccadillo in view of the vast amount of excellent descriptive material here brought together. Only a few of the many interesting data can be selected for mention here.

In consonance with Father Schmidt's views (of which the author, however, does not seem to be cognizant), the observation is recorded that

the more primitive the tribe, the more nearly in many respects is it allied to monotheism (p. 15).

The male Sky god usually assumes the place of supremacy, with an Earth goddess as his spouse. Symbolic representation is common, and in view of popular conceptions of "fetichism" the following remark merits quotation:

No case is known to me in which the representation has been ill-treated by disappointed votaries (p. 20).

True fetichism, in which the object of worship is not symbolic but is worshipped for itself . . . is absent from this country. Much of the ritual is aniconic. (p. 20 f.)

Most of the lesser deities are benevolent or neutral, though deliberate transgression of their laws leads to punishment (p. 80 f.). Medicine-men are often more powerful than chiefs, though in some cases the latter must share some of the "doctors' " knowledge, particularly in connection with the crops and rainfall (p. 155 f.). Ancestral spirits are believed to exert a great and constant influence on human affairs and in many tribes

no action of importance is taken without first seeking the advice and commands of the ancestors (p. 300).

They are likewise intimately connected with the cult of the secret organizations (p. 311).

As for social organization, there is a noticeable rarity of exogamous clans in the area, marriage being mainly regulated by kinship only (p. 255, 538). Residence is practically always patrilocal, the children belong to the father, and altogether the male side is weighted (pp. 427, 539). While bride-purchase is general, the frequency of exchange is noted among the Ibo (p. 440). Levirate and sororate are both common (p. 430).

Government varied considerably within the area. While the Bantu of Southern Nigeria were democratic in the sense that the main power was held by a council of elders, Benin represented a typical African autocracy, while among the Yoruba the secret societies were dominant (562-608). These and related associations had a number of distinct, though sometimes blended functions. For instance, the Oro

of the Yoruba, apart from its political aspects, featured the impersonation of a recently deceased member (p. 758). The Ibo had a series of clubs exacting heavy initiation fees with proportionate prestige in the community.

Admission to one of these orders bestows a position in the town which varies with the value of the particular "title," but those who have entered the highest grade form the governing body. It is therefore often impossible to distinguish between a man in his capacity as chief and as the member of a society (p. 771).

This is strongly reminiscent of the situation discovered among the Melanesians of the Banks Islands.

Age-classes (pp. 543-561) play a large part in native life, each having allotted to it some specific duty, such as policing towns or looking after the roads. Mr. Talbot gives interesting instances of the transformation of true age-classes into associations of another order, as when some Ibo groups allow purchase of senior status (p. 549).

Material culture is by no means slighted and is illustrated by many plates and text figures. To cite only a few details of comparative interest, the houses are almost uniformly rectangular (p. 880); farming devolves largely, but not entirely, on the women, yams forming the chief product of native horticulture (p. 904 f., 908); milk is unknown except in the northeast (p. 908); weaving is done partly by men, partly by women (p. 939); pottery is practiced by women, the vessels being

usually built up by the addition of successive small pieces or strips of clay (933).

The only phase of culture that is all but neglected is folk-literature which is briefly characterized (p. 957 sq.) but not illustrated by actual texts.

For comparative purposes the numerous tabular summaries and distribution maps are of the greatest value. Altogether the author must be congratulated on his new contribution to ethnographic literature.

ROBERT H. LOWIE

Jakt-och Fångstmetoder bland Afrikanska Folk. (With a Retrospect in English.) GERHARD LINDBLOM. Etnografiska Riksmuseet, Stockholm, 1925. In 2 parts.

In the first volume, Lindblom illustrates the striking conformity between Northeast and South Africa as regards several peculiar

methods of hunting. These methods include the use of ostrich disguise, the poisoning of watering-places, and the catching of crocodiles with hooks. From these, and other methods of the hunt common to both areas, Lindblom forms the opinion that there was an ancient historical connection between the two localities. West Africa, as usual, stands off as a separate cultural area, and none of the special methods of hunting and implements found by Lindblom in North-east and South Africa occur in the west.

The second volume deals with special methods of hunting in Africa. Two points of special interest are brought up. The first is the use by the negro races of Africa, and by these only, of a basket-work rat-trap somewhat like a bow-net. A peculiar variant of the bow-netted rat-trap is one that is edged around the mouth with thorns or points. Lindblom states that thorn-lined traps are found among the Naga, in Birmah, the Malacca Peninsula, Indonesia, etc. It will be of interest if the same form of rat-trap is also found in Madagascar.

A method of hunting by driving wild animals into an enclosure is known to have been practiced by the Lapps and people in general of the Arctic regions. It was found in Europe as well as in primitive North America, where it has been specifically mentioned for the Plains tribes and the tribes of California. In Africa, however, the method is only used by the Bushmen. It would seem more conservative, at the present, to regard this method of the Bushmen as an independent invention, rather than strive to find a historical setting for the trait outside of Africa.

E. M. LOEB

DISCUSSION AND CORRESPONDENCE

NOTES ON JEMEZ ETHNOGRAPHY

Dr. Elsie Clews Parsons' *The Pueblo of Jemez* (Papers of South-western Expedition Number 3, published for the Department of Archaeology of Phillips Academy, Andover, Mass., by the Yale University Press) is a beautifully printed and illustrated report and also well executed. In the review of this book in *El Palacio*, April 5th, 1926, the reviewer states:

Miss Parsons, in her description of ceremonies, masks, kiva paintings and symbols, also bears out Reagan's descriptions and observations on "Jemez" as published in *El Palacio* (and *The Transactions of the Kansas Academy of Science*) and in even greater detail in his *Don Diego*.

I note that Dr. Parsons seems to think that no white man has visited the kivas of Jemez in recent years. I beg to state that I visited them often when I was the Government official there. I even attended many of the "preparation" ceremonies in the kivas, preparatory to the public ceremonies and dances in the plaza, and especially the "preparation" ceremonies for the Corn Dance in the summer of 1900. By special invitation I also spent the last day I was at Jemez in the kiva attending the annual election of officers for the ensuing year, an account of which is here appended.

At about three o'clock in the morning of December 29, 1900, Victoriana Gachupine, the Indian who chored for me, woke me and said: "They have built the fires to the gods." I went to the house roof and saw a huge fire burning just without the pueblo in each of the cardinal directions, one to each of their deities. The one to the south represented the sun, the one to the north the moon, the one to the east the morning star, the one to the west the evening star.

"To-day is Election Day," broke in Mr. Gachupine as he joined me in the housetop. "Last night," he continued, "the cacique and chief religious men, and medicine men met and cast corn (cast lots) to see who would be a suitable man for governor (this is the Jemez mode of nominating a candidate). To-day we will vote for the governor and the other officers."

At that instant the heavy, guttural, basic command of the governor and his aids, who had just entered the plaza on their com-

manding tour broke the stillness of the early morning with (translated): "Go to the south estufa (kiva) to vote for governor to-day." This they repeated time after time as they made the circuit of the entire village, after which they visited my residence in a body and specially invited me to attend.

After this commanding tour was completed, nothing further of interest was noticeable till about ten o'clock in the forenoon, except that guards were put out on every side of the village to prevent any of the male Indians above twenty years of age from leaving the place. At ten o'clock the governor and his aids again appeared in the public square, and, as they walked around and around the streets of the village, they gave the command (translated): "Go to the election." This order was not obeyed. The Jemez never care to attend an election. If there, they stand a chance of being elected to some office; and if elected, they must serve, whether they want to or not.

At noon the governor and his aids again appeared and, in gruff coarse, emphatic, voices, gave the following and last command of the day (translated): "We command you (in the name of) all the gods of our fathers, go to the election." This order likewise was not obeyed. So the Indian constables were compelled to force attendance; some of the Indians were dragged from their dark rooms and carried, struggling, to the estufa (kiva).

When all were within the secret religious hall, the cacique, standing with his back against the posts which separate the north wall of that edifice into the two rainbow sections—the section of the Rainbow in the West and that of the Rainbow in the East, lifted his hands to heaven and out toward the symbolic paintings of the house as he prayed long and earnestly to his deities.

After his prayer was completed, the retiring governor, Augustine Pecos, gave his farewell address in the form of a prayer, as follows (translated):

O Sun, O Moon, O Evening Star, O Morning Star, O Montezuma (Pest-ya-sode), etc., O all the gods of our fathers, we indeed and in truth thank you for all things. We thank you for the infants, we thank you for the young women, we thank you for the young men, we thank you for the middle-aged and old women, we thank you for the old men, we thank you for the horses, we thank you for the mules, we thank you for the cattle, we thank you for the corn, we thank you for the wheat, . . . we thank you for our kind neighbors, we indeed and in truth thank you for all things.

Then turning to his associates in office, he said:

In the name of the God of day, of the God of Night, of the God of the Morning, of the God of the Evening, of the Great Water Snake, of the Flower-producing Flash Lightning, of Montezuma (Pest-ya-sode). . . . and of all the gods of our fathers, I thank you all for your faithful work. I thank you, cacique, I thank you, first assistant cacique, I thank you, second assistant cacique. I thank you, my first lieutenant-governor. I thank you, my second assistant lieutenant-governor. I thank you, war captain. I thank you, assistant war captain. I thank you, east-side ditch commissioner I indeed and in truth thank you all for your faithful work.

Then as he turned his face heavenward he continued:

In the year to come as in the past, O God of Rain, give us water. As in this year, O God of Bloom, give us flowers in abundance. Oh, may the gods of our fathers give us a bountiful harvest . . . and O God of Day, O God of Night . . . O gods of all our fathers, give us for the year to come a good governor.

Then, with one of the official canes raised toward the heavens, the other official rod of authority suspended over his visible hearers, he said:

I indeed and in truth thank you all, both those present and those above.

After the farewell address was finished, nominations were in order. The result of the casting of lots the night before was supposed to be in secret and not known to the populace. Mr. Jose Reyes Gallena was the candidate for governor. As soon as his nomination was announced, the vote was taken by acclamation, all rising and saying "*no p*," I being asked to vote with the rest. It was unanimous. Otherwise a new candidate would needs have been proposed; for everything must be by unanimous consent with the Jemez.

As soon as declared elected, the governor-elect went to the cacique and got down on his knees before him. Then that august person, the cacique, as he bent over the man at his feet, first prayed to his deities; second, he gave the new governor instructions as to the duties of his office; and, third, he gave him the two gold-headed canes of authority, which go with the office of governor. The now inaugurated governor rose from his humble position and seated himself at the right side of the cacique beneath the section of the Rainbow in the West.

The election of the other officers immediately followed. The election of each remaining officer was somewhat similar to that of governor, except in the case of the minor officers. Each of these was nominated by the retiring officer; and, as soon as elected, the

retiring officer turned his rod of authority over to him without ceremony. In all, thirty-one officers were elected.

When all the officers had been elected, the cacique again prayed long and earnestly to his gods and to their symbolic paintings on the kiva walls. With his prayer the election closed.

I note that Dr. Parsons had the Indians make her mask drawings and those of the kiva scenes for her. All the Jemez drawings of masks and kiva scenes I have had and used in my various publications I made myself, spending days in each kiva copying the scenes depicted on its walls.

Dr. Parsons seems to doubt that the Jemez ever fled to the Navajo country during the troubled times. She states, quoting, in part, from an ancient record,

The Jemez people were dispersed—in August (1696) when the mesa tops were reconnoitered by Lara they were found to be deserted; to live among the Navaho, possibly, I suggest, among the Zuñi, for several years.

That the Jemez went to the Navajo country is evidenced by many records and further by the fact that descendants of the Jemez who did not later return to their former home now form a part of the Navajo people, as the clan known as Maitheshkizh (Coyote Pass People), and so on.

Concerning these accessions to the Navajo tribe the Navajo Ethnological Dictionary says:¹

Strangely enough, some of the . . . accessions, such as the Jemez coincide both in name and affiliation with the original clans adopted by the Navajos from that tribe. These are not regarded as captive clans. . . . As their relationship with all the other clans of the group is never disputed.

Dr. Parsons secured only four or five of the many beautiful Jemez tales. Two of their other myths, which are of special interest, are here appended.

THE ORIGIN STORY AND THE MYTHICAL HISTORY OF THE JEMEZ PEOPLE

This earth is flat and round like a pancake and is known to possess four places of habitation, situated one above another. Each has for its roof the floor of the apartment above it, except this one, which has the sky. A long, long while ago our people lived in the apartment

¹ An Ethnological Dictionary of the Navajo Language, by the San Franciscan Fathers of St. Michaels, Arizona, 426.

beneath this one. For a long time they lived there. Finally one day a man saw a hole which led up through the roof to this world. He crawled up through it and all the people followed him.

The mouth of the hole being in the far north, a council was called. At this meeting the "principals" decided to move toward the noon-day sun. Said they: "The sun warmed the place from which we came; therefore, by moving towards it this earth must become warmer." So they began their march over mountains of ice and snow toward the boiling ocean.

For a long, long time they journeyed; but the land of sunshine was not reached. On, on they marched till their food supply became scanty and their blankets became worn out. Then one by one they died of cold and hunger. For a while those who survived kept up courage even under the adverse conditions, and continued their onward march. At last, however, their numbers being so depleted they became despondent and wished all to die.

At this juncture the mother god, the Moon, prayed to her husband, the Sun, to save the remnant of men, their children. So the Sun took one of the survivors of our people, painted his body in transverse black and white bands, decorated his hair with corn husks, and suspended eagle feathers behind each ear.

As soon as he was thus painted and decorated, this man became a "funny man," and began to dance, cut capers, and make grimaces. So interested did the people become in his performing that they forgot their sorrows and became glad. They then resumed their journey, which they continued till they reached the Rio Grande confluence.

Here in this valley they ceased their wanderings and took up their abode. Being few in numbers and not trained in the arts of war and defense, they were afraid of the savage tribes who dwelt in the region. So they established their places of habitation in narrow canyons, along cliffs, and in caves. In these they lived a great, great while, subsisting on the grain they raised and on the plentiful game. Then the savage hordes began to make inroads into their territory. They killed all the game, or, by their presence, it was made unsafe to hunt. They took the fields one by one. They drove the people to the cliffs and caves; and then captured these strongholds by storm or starved the people until they came out of their own accord and gave themselves over to be s'laughtered or to be enslaved. Only a few places still held out and these were reduced to such straits that their capture, followed by the massacre of the prisoners, was daily expected. Their annihilation was certain.

Again the mother god prayed to the Sun to save their children, and a second time the great father came to the rescue. At this time he placed among them a "knowing man," whose name was Pest-ya-sode.

Pest-ya-sode defeated the enemies, raised the siege of the cliffs and caves, and drove the savages out of the narrow canyons. He trained the people in the arts of war. He led them out into the open country. He at last expelled the hostile tribes from the region after a desperate encounter. He then instructed the Indians to build villages in horseshoe shape with continuous outer walls, so that they served both as places of residence and as fortifications. He taught them their religious rites and ceremonies. He instituted the sacred hunts. He taught the people to paint their houses and edifices of worship in representative figures of the gods. He made the clown-dancers the sprouters of grain; the "funny-men" the maturers of grain and of everything that lives and grows upon the earth. To the god-clown dancers he gave power to represent men before the deities. To the medicine-men he gave the power over "sickness" and over death. To the Sun priests and their aids he gave the power to intercede between those above and men.

For a long, long time he lived with them, extending their territory, building pueblos, and erecting edifices to the Sun. Finally, after he had made them a powerful and prosperous people, he called them all together and told them that there were many peoples that he must teach as he had taught them, and that he must go and instruct them. "Then," said he, "when I am gone you will neglect to do the things that I have taught you. Therefore will my father, the Sun, come in his wrath, destroy your pueblos, and give your fields to another race. After that will you return to do the things I have commanded you. Then when you have returned from your evil ways will I come on the wings of the morning, in the chariot of the Sun, expel the intruder from the land, restore your ancient possessions, and establish you in all your former glory."

After Pest-ya-sode had departed, the people did exactly what he said they would. They departed from keeping his sayings and commandments, and finally became divided. One division came to this valley, the remaining section staying at Pecos (New Mexico), the home of our tribe at the time Pest-ya-sode took his departure toward the boiling ocean. In this valley our people built village after village, only to have an earthquake throw them down or to have them razed

to the ground by some of our many enemies. We have built villages on almost every square mile of land in this valley from the Rio Grande river to this place, a distance of a good day's walk; and, besides the ruins in the valley, thirteen of our deserted villages dot the mesa to the northward between here and the boiling springs. But yet we were still powerful. We still had seven villages in the valley of this river which bears our name. Here our people were admirably situated for agricultural purposes. In the broad valley of the river and the valleys of its upper tributaries were large and good farms; while the great river always had water and to spare to irrigate the crops.

The scenery around the villages then was the same as that of the village now. To the north in Guadalupe canyon are the falls; and in the canyon of San Diego, the hot springs and soda dam. Still farther to the north is a forest-covered plateau and a great valley surrounded by obsidian cliffs and craters. To the northeast Mount Balda kisses the blue sky. To the east the Cochiti range shuts out the morning sun. To the southeast, across lava-capped mesas, our river joins the great river that flows in the direction of the sun at noon. Still farther southeast the high escarpment of the Sandia mountains rises abruptly from the plains. To the south are white-capped mesas; to the southwest, mesas and escarpments of stone so red that they reflect the rays of the morning sun, the reflected red light reaching even to this place. And to the west, the mountains, which have our name, give the sky a ragged horizon, while in the valleys are red and white domes and castled buttes.

With respect to defense, the situation of the villages then could scarcely have been bettered. The villages were walled. If defeated in the valley, our people could retreat to the isolated mesa at the forks of the river. There on its top they could make a decided stand against any enemy that might attack them, for its precipitous walls rise perpendicularly from the valley floor to eighty times the height of a man, and is only accessible by two narrow trails. But the evil day came.

While under Spanish yoke the people built the village and church of San Juan de los Jemez at the boiling (Jemez) springs, and the village and church of San Jose de los Jemez, at Canyon, the ruins of each of which still remain. Then the Indians rose against this race of intruders (1680) and killed them all at the two villages. But more palefaces came and took possession of the land.

Against the place on the mesa both in 1694 and in 1696 they came with their cannon, and after a many days' battle each time they captured it, reducing it, finally, to the mass of ruins it is this day. Furthermore, at each of these times some of our people escaped to the Navajo country, but the greater part of them were captured and reduced to a state of servitude.

They then moved us all to the valley where we now live, and where we were joined by the remnant of the Pecos tribe in 1838. Since then have we done penance and mortified our bodies to appease the wrath of our great father. And each morning at early dawn we send a man to the top of the mesa yonder to see if the great Pest-ya-sode is coming with his father on the wings of the morning to restore us our ancient possessions.

MYTH ABOUT THE MOON-MOTHER AND THE BEAR

Long, long ago our mother, the Moon, went down to the river in the early morning to get water to use in cooking breakfast for our father, the Sun. She dipped the water-jar into the flowing water and filled it nearly full. Then, to complete the filling, she took a gourd cup, as we all do, and commenced dipping up cups of water to put into the jug. Once, as she was leaning over to fill the cup, a bear, which had approached unnoticed, seized her from behind and carried her to his great cave in the mountains. In the entrance he then rolled a big rock, so that she could not escape, and there he kept her, bringing her food each day.

After she had been there a great while, she gave birth to a male child, the son of the god of day. This child grew to full maturity in this cave. He could not get out, because, on leaving each morning to search for food, the bear always rolled the rock into the entrance, and, on his returning, he closed it behind him at all times with the same rock. But after obtaining his full powers, this offspring of the parents of all things was able to roll the stone away and go where and whenever he pleased. He always continued, however, to go after the bear had departed in pursuit of game and to return before that animal came back at the close of day.

At first, this son of the Moon thought that he was the offspring of the bear, but, at length, his mother told him who his true father was and related to him how it happened that she was in that miserable condition. From that time on the mother and son talked over plans of escape. At last they made up their minds what to do, and at the first opportunity they failed not to put their plans into execution.

As soon as the bear was out of sight and hearing one morning, the son of our great mother rolled the stone from the cave entrance, put his mother on his back, and ran and ran all day toward the place where the sun sets; because he knew that at this place the sun touches the earth on all sides of the great hole at his going down. Towards night they could hear the growling bear coming in the distance. Harder and harder our first brother ran with our mother. Nearer and nearer the bear came. With open mouth he got so close to them that his breath blew in our mother's face. With a horrifying growl the animal sprang to seize her. At the same moment our brother, with one great leap, reached the palace of the sun. Then the great gate closed and shut the bear out.

But the terrible beast charged upon the gate and would have broken it in pieces had not our brother left his mother and driven him from the palace front with his mighty war-club. Bent upon having his wife, as the bear styled our mother, he then attacked the palace in the rear. On this side another of our brothers, a son of those above, defended the edifice and drove the infuriated animal away.

To reward these defenders of the Sun's wife and of his home, the Great Spirit made our first brother the morning star, and the other the evening star. They are in the sky. We have all seen them. The morning star still guards the entrance to the sun in front, the evening star the entrance in the rear, while the bear is cast far out in the cold, northern heavens.

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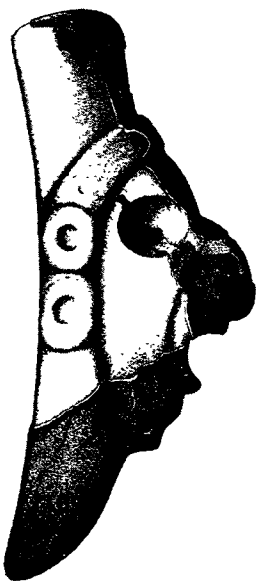
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THE USE OF PLASTER ON PORTO RICAN STONE CARVINGS

Students of Porto Rican archaeology have been puzzled by the wide variety in quality of the stone carvings from that island. The Indians of Borinquen had acquired great skill in the cutting and polishing of hard stones, and certain examples of their handiwork—

celts, monolithic axes, three pointed stones, collars, etc.—exhibit a technical mastery of material scarcely equaled in the New World. It is therefore surprising to find artifacts at times finely wrought and at times roughly finished.

A plausible explanation for this divergence in quality is offered by the stone head here illustrated. It is a head of a not uncommon type, curved at the back in a manner suggesting the more frequently



Stone head, Manati, Porto Rico. Length: 10 inches.

encountered three pointed stones. However, it is a most unusual piece in that the surface of the stone has been encased in a thin layer of plaster. Today the plaster is badly cracked and roughened by erosion, but the original surface seems to have been nicely smoothed. This head was found near Manati on the north coast of the island. It is said to have been dug out with a stone collar. When seen by the writers several years ago it was in the possession of Señor Masso, district inspector of schools at San German.

The use of plaster to finish stone carvings was well known in Mexico and Central America, and examples may be seen in any good collection. In that region, paint and inlay of shell and stone played

an important part in the final appearance of the sculpture. In the West Indies a few examples of shell inlay have survived, and traces of paint can be seen on a few carved stones. We judge that the Porto Ricans were so inexpert in the making of plaster that it has rarely survived and can only be preserved by expert handling when exposed to the air. Most unfortunately for our knowledge of the island none of the more important types of stone objects represented in our museums has been excavated by trained observers.

R. W. and S. K. LOTHROP

ZEITSCHRIFT FÜR VÖLKERPSYCHOLOGIE UND SOZIOLOGIE

In January, 1925, Californian friends of Dr. Richard Thurnwald received a letter from him in which he stated that

after nearly a decade of starvation in Germany, one notices a decided improvement in affairs; and therefore I am now in a position to found a new journal. It will be called "Zeitschrift für Völkerpsychologie und Sociologie."

He succeeded in assembling a group of fellow-workers, and, in consequence, it is now possible to give a brief indication of the first issues. The Journal is, possibly, the first to include all sciences connected with man's life; i.e., sociology, pedagogy, economics, criminology, psychiatry, biology, and above all psychology. The latter half of each number comprises reports and discussions of recent books and significant papers from European and American journals, giving also a list of the latest journals and books.

A fitting article for the opening number of 1925 is Dr. Thurnwald's, "Problems of Racial Psychology and Sociology," which is remarkable both for information and style. We have here a short account of earlier and somewhat similar journals, and an explanation of the connection between the sciences of psychology, sociology, biology, and anthropology. The author also discusses sociological topics, elucidating them by means of illustrations from the lives of the natives of New Guinea, Australia, and from characters in history. This paper has a sequel in an article of the March journal of 1926, called "Leadership and the Sifting Process," an important discussion of the development of leaders and their influence on the group.

The islands of the Pacific are treated in Dr. B. Malinowski's "Investigations in a Mother Right Community" and in Dr. A. W. Nieuwenhuis' "Primitive Man and his World." The latter is an analysis, according to the laws of psychology, of the mind of primitive

man, as shown by his reactions to the world about him, this domain being the Malay and the Indian Archipelagos and some islands of the Dutch East Indies.

Dr. V. E. von Gebattel's article on "Marriage and Love," is devoted to the difference between transitory love and marriage. He demonstrates that marriage, as an institution, is not at fault, because of many unhappy unions; but that there are unfortunate marriages for the reason that they are based on physical attraction, which does not outlast the first few months. There is a wide-spread belief that love and marriage are incompatible, and that as marriage has failed, illegal love is justifiable. According to Ellen Key, such unions, where love exists, may be excusable; but not polygamy, as practised by so-called civilized people. This is degeneration. The author states that a successful marriage is founded neither on amateness nor romantic Eros, but on an affection which sees in the beloved a *beau ideal*, a spiritual image, but one of decided essentiality. Dr. von Gebattel shows that both a free union and marriage have this ideal conception, but that the latter is the better way. For into it enters obedience to the laws of the community.

Attention may also be called to an authoritative article by E. Schultz-Ewerth, late Governor of German Samoa, on "The Dangers from the Colored Races." The writer states that the awakening of the colored peoples is, psychologically, an increasing self-consciousness, which denies the intellectual and moral superiority of the European. He explains that civilization alone is to blame for this, and that every European, no matter what his position, who shares in the propagation of the things the white man's intelligence has produced, is at once a propagandist of the revolution.

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THE MORNING STAR CULT IN THE SOUTHWEST

The following extract from field-notes made at the Tewa pueblo of Hano in 1912 is offered as a supplementary note to Mr. Ralph Linton's article on the origin of the Pawnee Sacrifice to the Morning Star in the *AMERICAN ANTHROPOLOGIST* for July 1926.

When any scalps were taken, they were brought to the *ḥo ta'i'i*; he watched the night with them, and before day, at the rising of *'Agayo Tso'yo* ("Great

Star"), he washed their hair and gave them a name. But the name was always the same—'Agayo Tso'yo. [Informant: Be'iti, Cloud clan, Hano, aged about 80. Interpreter: 'Agayo Ts'æ, Corn clan, Hano.]

P'ota'i'i ("dry head one") was the title given at Hano to a noted scalp-taker who had become a war-chief. "Washing the head and giving a name" is the regular form by which a change of status is marked, e.g., at adoption into a clan. At Oraibi the scalp-taker himself was given a new name, which he kept secret. 'Agayo Tso'yo is the Morning Star.

In the version of the Tewa migration-story told by the Corn clan at Hano, the part usually played by the *Peñi Tso'yo* ("Great Dead Man") is assigned to the 'Agayo *Señ'i'i* ("Horned Star"). The *Peñi Tso'yo* of Tewa mythology corresponds to the Hopi *Masauwu*, who is sometimes represented by an actor wearing a mask with a bloody head, as if newly scalped.

The interpreter said that the Horned Star is not visible in the sky: "it is on the upper side of the sky—does not like to be seen; we pray to him for things."

In the same version of the migration-story, it is said that when the people were making the stars of quartz crystals, "they made *Tse kqη kwiyo* ("yellowness gone lady"), the star which is seen in the western sky at sunset; and also the star which is seen in the east when the sun sets. Next they made *T'ili'i* ("crowded"), the Pleiades; *Kwidi'i* ("ranged in a row"), Orion's Belt another star in the south-west, *Kodi Iowa 'agayo* ("rich people star"); and another in the east or north-east which they called *P'o ta'i'i* "scalp-taker" or "war chief." "These two, *Tse kqη kwiyo* and *P'o ta'i'i*, are both *po ta'i'i*, and have to take care of the others who are to be their children. *T'ili'i* are the people."

BARBARA AITKEN

LONDON, ENGLAND, October 1926.

DIFFUSION CENTER VS. MELTING POT

In writing on "The Origin of the Skidi Pawnee Sacrifice to the Morning Star," (AM. ANTH., July 1926), Ralph Linton ends his clear article with the words,

Nearly all the specialized Mexican traits which are present in the Southeast are lacking in the Southwest and vice versa. I think that this fact can only be explained by the assumption that there were two centers of diffusion within

Mexico, one of which influenced the Southeast and the other the Southwest. One center was probably in the highlands, and the other on the east coast. To judge from the traits which spread northward from them, the cultures of these two centers must have differed considerably.

May I make the suggestion that Mexico was influenced by the north, and blended the two northern cultures? We know that there was communication between Mexico and the Southeast and Southwest. It is possible that Mexico adopted scaffold torture, temples built on pyramidal mounds, certain pottery forms and art motives from the lower Mississippi valley, and stone construction, impersonation of deities, cardiac sacrifice, weaving, mosaic work and the maize complex from the Southwest. If we adopt this view, we shall find no occasion for surprise that "Nearly all the specialized 'Mexican' traits which are present in the Southeast are lacking in the Southwest, and vice versa."

Any high civilization is not only a center of diffusion, but also a melting pot; a focal point as well as a focus. Simple civilizations, in the aggregate, probably influence neighbouring complex civilizations as much as they are influenced. Thus Rome was not merely a diffusion center, but a cross-roads where many civilizations met, and were either elaborated or debased. Of course, both ancient Rome and ancient Mexico made original contributions to civilization, too. But we must not forget that the Aztec, Maya, and Inca drew upon the surrounding tribes for cultural traits, just as New York City draws upon Sleepy Hollow, Baltramansk, and the seven Buddhist hells for sweetness and light.

JOHN OWEN CLARK

FIRST IMPERIAL COLLEGE,
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REPORT TO THE COUNCIL OF THE AMERICAN ANTHROPOLOGICAL
ASSOCIATION BY THE CHAIRMAN OF THE DIVISION OF
ANTHROPOLOGY AND PSYCHOLOGY OF THE
NATIONAL RESEARCH COUNCIL¹

At its last annual meeting, the Council of the American Anthropological Association appointed a committee consisting of Doctors Boas, Hough, and Hooton to consider the relations between the

¹ Received by the Editor on April 25, 1927.

Association and the National Research Council. On February 24, 1926, Dr. Boas, Chairman of the Committee communicated to the Division the following:

In the opinion of the American Anthropological Association a closer cooperation between the National Research Council, more particularly to the Division of Anthropology and Psychology, is considered highly desirable. Since the American Anthropological Association appoints representatives, it shares with the National Research Council the responsibility for the conduct of the Division and for enterprises in which the Division participates. In order to make this possible the American Anthropological Association believes that it is indispensable that annual reports on the progress of work in the Division should be rendered, and it should be in a position to express its opinion in regard to the work that is going on.

I had the privilege of taking part in the discussion which led to the formation of Dr. Boas' committee; I have since talked with many Anthropologists about the affairs of the Division; and since assuming its chairmanship I have naturally given much anxious thought to the question of how it might best advance our science. The result of all this is a belief that the Division has not yet been able to fulfil to the maximum its possibilities for service, because it has not had the enthusiastic support of Anthropologists, and that this support has been withheld because the nature and particularly the limitations of the Division have not been made clear to them. Anthropologists have expected more of the Division along certain lines than was possible for it to accomplish; and their disappointment in this regard has, I think, diverted their attention from less obvious but surely no less important aspects of the Division's field of work. It may be well to state briefly the aims of the National Research Council and the organization of the Division.

The National Research Council is neither a large operating scientific laboratory, nor a repository of large funds to be given away to scattered scientific workers or institutions. It is rather an organization which while clearly recognizing the unique value of individual work hopes especially to help bring together scattered work and workers, and to assist in coordinating, in some measure, scientific attack in America upon large problems in any and all lines of scientific activity, especially, perhaps, upon those problems which depend for successful solution on the cooperation of several or many workers and laboratories either within the realm of a single science or representing different realms in which various parts of a single problem may lie.*

* Annual report for 1926, p. 2.

Aside from a small group of permanent administrative officers, the Council, or rather that part of it which concerns itself with the natural sciences, is made up of representatives of the leading scientific and technical societies of America, plus a certain number of members at large. These are grouped into seven divisions: (1) Physics, Mathematics, and Astronomy; (2) Engineering and Industrial Research; (3) Chemistry and Chemical Technology; (4) Geology and Geography; (5) Medical Sciences; (6) Biology and Agriculture; (7) Anthropology and Psychology.

Our Division is made up of six representatives from the American Anthropological Association; six from the American Psychological Association; six members at large, three Anthropologists and three Psychologists; one representative from the Educational Research Association, and one from the Council's Division of Federal Relations. From this membership there is chosen a resident chairman who ordinarily serves for one year. When the chairman is an Anthropologist the vice-chairman is usually a Psychologist and vice-versa; there is, however, no regulation governing this matter, nor is there any provision that strict alternation of Anthropologists and Psychologists should take place in the choice of chairmen. The salaries of the chairman and his secretary are paid from the general funds of the Research Council; the Division also receives from the same source a yearly appropriation for general maintenance, sufficient to cover the cost of the annual meeting, and leave a small balance for contingencies. The Division has no funds of its own to be allocated for research.

The present anthropological activities of the Division are as follows:

(1) *Committee on State Archaeological Surveys.* Seeks to stimulate archaeological work by properly qualified state agencies, to coordinate the results of such work, to promote contacts between investigators, and to encourage the preservation of archaeological sites. Publishes each year in the *AMERICAN ANTHROPOLOGIST* a summary of current projects.

(2) *Committee on Child Development.* The work of this committee concerns all biological aspects of the child of pre-school age. Included among its interests, therefore, is the physical anthropology of children, and the anthropological side of child-psychology.

(3) *Committee on the Classification of Anthropological Literature.* Organized to pass upon a specific project in classification. It is also available for service as an advisory body.

(4) *Committee on a Study of the American Negro*. Newly organized at the request of Anthropologists for the purpose of coordinating and stimulating Negro research.

(5) *Committee on a Study of Pelvic Structure*. Newly organized for the purpose of considering a specific project of research.

The Division can serve Anthropology in many ways. It provides by its annual meetings and by the four stated meetings a year of its Executive Committee, opportunity for the discussion of anthropological topics, and the consideration of anthropological projects, by a group of representatives of the Anthropological Association, who, if the Association selects wisely, should be those most competent for such deliberations. Secondly, the Division has, approximately every other year, an anthropological chairman, resident in Washington, equipped with adequate office and secretarial facilities, who not only can devote a considerable share of his attention to anthropological matters, but can work under the most favorable conditions to promote between Anthropology and the other sciences represented in the Council those contacts which are so essential to the progress of research. Furthermore, the Division can provide the machinery by the establishment of sub-committees both within and without its membership, for the study or promotion of special aspects of Anthropology. Finally, it can be of assistance in the raising of funds for the prosecution of anthropological research by adding the weight of its endorsement to projects already under consideration by donors or by attempting itself to find donors and enlist their support.

The organization and the scope of the Division have now been considered. It remains to discuss certain criticisms of the functioning of the Division. It has been felt by some:

(1) That it loses efficiency by attempting to cover two fields as large as Anthropology and Psychology.

(2) That it has been inactive.

(3) That it has not kept the Association informed as to its activities.

(4) That it has failed to secure adequate financial backing for Anthropological projects.

(5) That it has expended money unwisely.

The association of Anthropology and Psychology in one Division of the Research Council is primarily a matter of financial necessity. Sufficient funds are not available to provide for separate Divisions of these two sciences. That we are not discriminated against in this regard is shown by the grouping in the Council of, for instance,

Physics, Mathematics and Astronomy; and Biology and Agriculture. It would, of course, be desirable in many ways for us to enjoy the material benefits of an independent section; but, on the other hand, there are very distinct compensations. As has often been pointed out, the contacts between Anthropology and Psychology are both numerous and important. Each science has developed techniques and has acquired data of great value for the other, and the pooling of these, together with the diverse view-points from which problems can be considered, has always been one of the most stimulating aspects of the Division's work. It should be added that the Psychologists have never attempted to assert that dominance in the affairs of the Division, to which the numerical superiority of workers in their science (probably ten to one) might seem to entitle them. They have, as a matter of fact, done everything in their power to assist the growth of Anthropology, and are attempting at the present time to promote its teaching in those universities which have no departments.

If the Division has been inactive, its inactivity has been due, I am sure, more to lack of funds than to bureaucratic sloth. That it has not kept the Association informed as to what it has done is, it seems to me, a much more serious charge, because it has not only deprived the Association of knowledge to which, as the agency responsible for the selection of the anthropological members of the Division, it is naturally entitled; but has deprived the Division of that whole-hearted coöperation of all Anthropologists which is so absolutely essential for its development.

The feeling that the Division has failed to secure adequate backing for Anthropological projects, and that when money was available it has at times been unwisely expended, has, I believe, less justification. It is due to a misunderstanding on the part of Anthropologists of the policy and especially of the financial limitations of the Research Council. As has been said before, the Division is not in possession of funds for distribution in the form of grants. Such funds would, indeed, place it in the difficult position of arbiter between the merits of different aspects of research; it is always ready, however, to do what it can to assist in the financing of worthy projects. In the case of our Division, funds have come in two ways. In one set of instances, donors have approached the Division for advice as to the accomplishment of certain definite ends, and have later requested the Division, through one of its committees, to undertake the administration of grants. Certain projects originating outside of this Division and

coming to it, so to speak, ready-financed, have presumably given rise to the feeling that the Division was spending money unwisely, because it was being used for undertakings not thought by some students to be of primary importance. It should be remembered, however, that for the prosecution of these researches, no funds have been depleted that could have been disbursed for other activities. Needless to say, the Division only accepts responsibility for undertakings as to the value of which it is thoroughly convinced; and the most captious critic could hardly object to its employment of available funds for worthy ends, merely because support for other researches, even possibly of greater significance, could not at the moment be had.

The same set of considerations applies to the financing of projects originating in the Division, or presented to it for assistance. Donors, whether individuals or foundations, usually have special interests or special fields of endeavor, and if projects under consideration happen to be in line with these, backing is naturally not difficult to obtain. If, however, a project does not accord obviously with the desires of any potential donor, the Division must, like any other sales agency, attempt to create a demand for it by emphasizing its basic scientific importance, or its immediate practical value. The success of the Division's effort must necessarily depend, to a large extent, upon the assistance that it receives, first from those actively interested in any given project, secondly from the general body of Anthropologists. Without the former it can hardly hope to present the concrete case with a maximum of effect; without the latter it can never attain a position sufficiently influential for its recommendations to carry weight. Anthropology will be benefited by the Division in exact proportion to the amount of effort that Anthropologists are willing to put into it.

A. V. KIDDER

ANTHROPOLOGICAL NOTES AND NEWS

THE PUTNAM BAFFIN ISLAND EXPEDITION sailed last summer under the auspices of the American Geographical Society, the Museum of the American Indian, Heye Foundation, the American Museum of Natural History and the Buffalo Society of Natural Sciences. The planned route of the expedition was westerly through Hudson Strait and thence north into the Fox Basin district. The expedition's anthropological activities were carried on in behalf of the Museum of the American Indian, Heye Foundation which was represented by Donald A. Cadzow.

Field Museum of Natural History is making available for public exhibits, fourteen large halls through a rearrangement of its heating system. Of these halls, eleven will be devoted to anthropological specimens. Among exhibits planned are those from Melanesia, the Philippine Islands, Malay Peninsula and Malay Archipelago, Polynesia, Micronesia, Madagascar and East Africa, North, West and South Africa, India, Egypt and Mesopotamia. The new halls will make it possible to devote the entire east wing of the main floor exclusively to North, Central and South American archaeology and ethnology. One of the new halls will be devoted to exhibits illustrating the progress of prehistoric man, for which Henry Field, assistant curator of physical anthropology, is now collecting in Europe. Another hall will be devoted to physical anthropology.

ERICH F. SCHMIDT, assistant in archaeology in the department of anthropology of the American Museum of Natural History, has joined the field party of the Oriental Research Institute of the University of Chicago, to assist in an archaeological reconnaissance of Asia Minor. —*Science*

DR. GEORGE GRANT MACCURDY, of Yale University, director of the American School of Prehistoric Research, was designated to represent the Paris Society at the commemoration of the two hundredth anniversary of the founding of the American Philosophical Society, held in Philadelphia, April 27 to 30.

DR. MACCURDY has been appointed a member-at-large of the division of foreign relations of the National Research Council. Dr. and Mrs. MacCurdy will leave for Europe on May 19 to do reconnaissance work in prehistory prior to the opening of the summer term of the American School of Prehistoric Research on June 27.

—*Science*

MRS. ZELIA NUTTALL has recently been elected fellow of the Royal Anthropological Institute of Great Britain and Ireland and corresponding member of the Geographical Society of Philadelphia, to fill the vacancy created by the death of Sir John Keltie, the president of the Royal Geographical Society of England.

—*Science*

PROFESSOR WILLIAM THALBITZER, Danish naturalist and Arctic explorer, has been awarded the Loubat prize of the Swedish Academy of Science.

—*Science*

DR. WALDEMAR JOCHELSON, who has been the guest of the American Museum of Natural History during his visit to America, is now preparing to return to Russia, where he has accepted a position as division curator of the Museum of Anthropology and Ethnography of the Academy of Sciences, Leningrad, and as lecturer on ethnology at the Leningrad University.

—*Science*

DR. TRUMAN MICHELSON, ethnologist in the U. S. Bureau of American Ethnology, resumed his studies among the Fox Indians of Iowa during the summer.

—*Science*

According to the Italian correspondent of the *Journal* of the American Medical Association, the Emperor William institute for anthropology, hereditary transmission in man, and eugenics, which is being erected in Dahlem, near Berlin, by the Kaiser-Wilhelm-Gesellschaft, is rapidly nearing completion. Professor Eugen Fischer, anatomist, of Freiburg, will be the director of the institute. He will also be the head of the department of anthropology. The department of hereditary transmission in man will be in charge of Professor Muckermann, a former Jesuit father. The head of the department of eugenics has not yet been announced. It was hoped that the new institute can be dedicated in September, in connection with the

meeting of the International Congress on Heredity, which it to be held in Berlin.

—*Science*

NEIL M. JUDD, curator of American archaeology in the United States National Museum, has left Washington to complete his explorations at Pueblo Bonito, New Mexico, under the auspices of the National Geographic Society. This season's expedition is the seventh sent by the Society for the purpose of recovering and recording the story of this prehistoric Indian village.

—*Science*

PROFESSOR FAY-COOPER COLE, of the department of anthropology, University of Chicago, continued the extensive study of the Illinois mounds which he began last year. Illinois, according to Professor Cole, is the key state in anthropology for prehistoric America. His work last summer was part of a program that may take ten years to complete. Information was gathered on the mounds of the state by advanced students under his direction, and some preliminary excavations made.

—*Science*

PROFESSOR EDWIN SAPIR, of the department of anthropology, University of Chicago, and Fang-Kuei Li, Chinese student, studied the language of a group of Hupa Indians in northwestern California. Li, who is specializing in linguistics, is working under the committee on American Indian languages of the Council of American Learned Societies. He will teach Chinese at the university next year.

—*Science*

WARREN K. MOOREHEAD, director of the department of archaeology at Phillips Academy, recently received the honorary degree of doctor of science from Oglethorpe University, in recognition of work in American archaeology.

—*Science*

DR. FREDERICK STARR, associate professor emeritus of anthropology at the University of Chicago, who has returned from Japan, gave on August 2 a lecture at the university on life in that archipelago.

—*Science*

SIR HARRY JOHNSTON, the well-known explorer, naturalist and author, died in London on July 31, aged sixty-nine years.

—*Science*

DR. GUSTAV FRITSCH, professor of anatomy and physiology in the University of Berlin, has died at the age of eighty-nine years.

—*Science*

DR. WEGNER, professor of anthropology at the University of Frankfurt, has been chosen by the German minister of science, arts and education to conduct the 1928 expedition to Bolivia of the Frankfurt Society of Anthropology, Ethnology and Palaeontology.

—*Science*

DR. OTTO RECHE, since 1924 professor of anthropology and ethnography in Vienna, has accepted the corresponding position in Leipzig.

FELLOWS OF THE SOCIAL SCIENCE RESEARCH COUNCIL

The Fellowship Committee of the Social Science Research Council announces the appointment of the following eighteen scholars as research fellows of the Council for the year 1927-28, with two applications pending.

Of these the following are new appointments:

Asher Achinstein (Ph.D. Columbia)

Graduate student, Columbia University

Project: Time Sequences of Cyclical Phenomena in Business with Particular Reference to the Lag Between Production and Prices.

Place of study: New York.

Crane Brinton (Ph.D. Oxford)

Instructor, Harvard University

Project: The Economic and Social Status of the Rank and File of the Jacobin Clubs during the French Revolution.

Place of study: France.

Emily Clark Brown (Ph.D. Chicago)

Research Assistant, University of Chicago

Project: Industrial Relations in the Printing Trades in the United States and Great Britain.

Place of study: New York, Boston, Baltimore.

Ruth L. Bunzel (Ph.D. Columbia)

Graduate student

Project: Social and Individual Adjustments in a Primitive Community, with Special Reference to the Zuñi Indians.

Place of study: Zuñi, New Mexico.

Walter L. Dorn (Ph.D. Chicago)

Instructor in History, Dean in the Colleges of Arts and Literature,
Chicago

Project: The Public Administration of Frederic II of Prussia.

Place of study: Berlin, Vienna, Paris and London.

Wallace K. Ferguson (M.A. Cornell)

Assistant in Medieval and Intellectual History, Cornell

Project: A Study of the Social and Political Ideas of Erasmus Based
on His Unacknowledged Publications.

Place of study: England, France, and Germany.

Leo Gershoy (Ph.D. Cornell)

Private tutoring

Project: The Career and Influence of Barère during the French Revolution.

Place of study: France.

William T. Ham (Ph.D. Harvard)

Instructor and Tutor in Economics at Harvard and Radcliffe

Project: Industrial Relations in the Building Trades in Great Britain
and Germany.

Place of study: Great Britain, Germany, France.

Mildred L. Hartsough (Ph.D. Minnesota)

Instructor in Economics and Sociology, Smith College

Project: A Study of Economic Concentration in Western Germany and
the Rhineland, with Some Reference to Its Political Aspects.

Place of study: Berlin, Hamburg, and Rhenish Cities.

Leonard Manyon (B.A.)

Instructor in History, University of Michigan

Project: The Guild Movement in Italy under the Fascist Régime.

Place of study: Italy.

Jacob Perlman (Ph.D. Wisconsin)

Assistant Professor in Economics, Northwestern University

Project: The Development of the Brotherhood of Locomotive Engineers
with Special Reference to the Transition to the New Unionism.

Place of study: Cleveland, Ohio.

James K. Pollock, Jr. (Ph.D. Harvard)

Instructor in Political Science, University of Michigan

Project: The Use of Money in English, French, and German Elections.

Place of study: England, France, and Germany.

Frederick S. Rodkey (Ph.D. Illinois)

Associate Professor of History, Miami University, Oxford, Ohio

Project: British Interests and Policies in the Near East, 1821-1878.

Place of study: London, Near East, Vienna, and Paris.

Max J. Wasserman (Docteur en Droit, University de Lyon, France)

Associate in Economics, University of Illinois

Project: The Effect of Monetary and Credit Inflation in France on
Some Aspects of French Business Enterprise.

Place of study: Paris and Lyons, France.

Helen L. Witmer (Ph.D. Wisconsin)

Assistant Professor, Social Hygiene Research, University of Minnesota

Project: Some Effects of the English Social Insurance Acts on Pauperism.

Place of study: London.

The following are reappointments:

Norman E. Himes (M.A. Harvard)

Instructor in Economics and Sociology, Cornell College, Mount Vernon,
Iowa.

Project: The History of the Birth Control Movement in England with
Special Reference to the Development and Work of the Birth
Control Clinics.

Place of study: England.

William Jaffé (Docteur en Droit, Paris)

Tutor in French and Economics, College of the City of New York

Project: The Industrial Revolution in France

Place of study: France.

Heinrich Klüver (Ph.D. Stanford)

Instructor in Psychology, University of Minnesota

Project: The Eidetic Type: Field Studies in Various American Com-
munities.

Place of study: Columbia University.

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Owing to an error in the paging of No. 3 of this volume, its pagination from 177 to 349 duplicates that of No. 2. To overcome this difficulty in the Index, the symbol "x" is affixed to references to pages in the July-September issue (No. 3) to distinguish them from those in the preceding number. For example, MAYA INSCRIPTIONS, IV, 283x.

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